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Plant Poisoning in Animals.*

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When I promised our Secretary that I would read a paper on plant poisoning, it was an easy matter to make a promise, but now I come to the task of putting it together, I find it much more difficult, and also how very little I know about the subject, which, to a country practitioner, is a very important one. My real object in bringing it forward to-day, was to learn something from gentlemen present, rather than try to impart anything that I may know myself. I have always been very interested in botany, and more especially poisonous plants. The diagnosis of poisoning in animals by plants is very difficult, obscure, and often impossible. Country practitioners will bear me out when I say that we are often called in to a herd of animals where we find some dead, and a good many others ill, yet, on making, as far as we are able, the most exhaustive enquiries, and doing our best to trace the source of the trouble, both in the food and the water, which may lead us to any definite clues, we more often than not know as much at the finish as we did at the start. Anyhow, the first asset in trying to get at the bottom of a suspected case of poisoning (and I am speaking more especially of plant poisoning) is to have a knowledge of what plants are poisonous, and those that are harmless. Other important points to take into consideration are the season of the year, the age of the plant and whether the seeds, flowers, leaves, or roots have been eaten. Some plants are more poisonous in the young state, whilst others are more so in their later stages. Undoubtedly, plant poisoning is more common in some parts of the country than in others, but I must say, from my own personal experience, that we get a fair amount of it in the Eastern Counties. As a rule the instinct of animals guards them from eating poisonous plants, when there is plenty of other food present. Cases of poisoning with which I have been brought in contact have mostly occurred when the plant has been cut up and mixed with other food; also, different animals are more susceptible to some poisons than others. Some localities seem to be responsible for deaths amongst stock at certain times of the year, but whether or not these cases are due to plant poisoning I am quite unable to say, as I have never been able to find any poisonous plants present. I have in my mind at the present time two pastures where, if young stock are turned on in the early spring, we invariably get losses amongst them, and as I said before I have made a very careful search in these pastures, and have never been able to trace the cause of the deaths. The animals, after being turned on these pastures, appear dull, are off their feed, scour, and stand sulking in a corner of the pasture, and succumb within twelve to twenty-four hours. On *post-mortem* examination the only thing that can be seen is a patchy inflammation of the fourth stomach.

Another source of poisoning I have met with is when refuse from gardens has been thrown out and animals have eaten this. One case of this description occurred, as far as I can remember, in the autumn, but as I am harking back more than thirty years, you will readily understand that the details are somewhat uncertain. From what I can remember, the gardener at one of the large halls threw out a number of refuse plants from the gardens on to the park, where about sixty cattle had access. It was not long before one or two were found dead, and a great many more showing symptoms of pain, with frothing at the mouth and purgation. Coma and death followed in, I think, about half the cases. Amongst the plants thrown out was a great amount of aconite and anemone. An action was brought by the farmer against the owner of the gardens, and I think he was awarded about £200 damages. Another case occurred last year, one farmer losing four or five cows from eating dahlia tubers, which had been thrown from a cottage garden on to the side of the road. Shortly after eating these roots the cattle were showing symptoms of pain, black fœtid diarrhœa, and other symptoms of intense stomach irritation. Two or three died within a very short time, and the other two lingered on for a week, or ten days. *Post-mortem* showed intense inflammation of the stomach and intestines.

A possible source of poisoning has struck me as being feasible, and that is the different kinds of fungi we see about, but whether or not these do cause animal poisoning, I am quite at a loss to say.

I do not propose in this paper to enlarge on the treatment of plant poisoning in animals. The first step to take is to have the animals removed from any suspected place to those above suspicion, and then to make a thorough and systematic search of any places to which the animals have had access. Enquiries should not stop at places where the animals are supposed to have been when symptoms were first noticed, as, in some cases of poisoning, I know animals to have got the poison into the system and not to show any symptoms for perhaps several weeks. It is therefore advisable to find out if these animals have had any change of locality for several weeks before the symptoms have become manifest, and thoroughly to search these latter places. It must be also borne in mind that a good many of the plants in the dried state are poisonous, and can easily cause death when eaten amongst hay, etc. I think it is very well known that the amount of poison found in the same species of plant varies a good deal according to the season, locality and soil.

With these few remarks, I think it is better to notice the plants in their natural orders, and I may here say that I propose to refer chiefly to those plants with which I have met either as causing definite symptoms of poisoning, or which I have suspected as doing so.

* Paper presented to the Eastern Counties Division, N.V.M.A., at Norwich, on 1st August, 1929.

The first is the genus Ranunculus, or buttercup, and I believe the flowers are the most poisonous, then the leaf, and the stem. The most poisonous is the celery-leaved buttercup. Personally, I have never diagnosed buttercup poisoning.

The next species we come to in the order Ranunculaceæ are the hellebores. The ordinary Christmas rose seen in the garden is the *Helleborus niger*, but the two hellebores which are the most poisonous are *Helleborus fœtidus* and *viridis*. I find it is stated that the dried root is toxic in 2½ ounce doses to the horse, but I have frequently seen two drams of powdered black, or white, hellebores cause very alarming symptoms. In the early days of my practice on several occasions I got messages to see horses supposed to be choked, and on arrival found the animal showing typical symptoms of choking. On making enquiries as to what was the possible cause of the choking, the owners were at a loss to say, but I usually elicited the fact that they had a few hours previously given a grease ball from a certain chemist, which undoubtedly contained powdered hellebore in too large doses, and which, as you know, is a very old constituent of a good many so-called grease balls. The symptoms passed off in two or three hours without any bad results. All the parts of the plant and roots are poisonous, and the symptoms of poisoning by these plants are very diagnostic. In the horse there are constant attempts to vomit, salivation, and purgation.

Two other poisonous plants of this order are the larkspur and aconite. In aconite poisoning the predominant symptom is constant attempts at deglutition, due to the numbing action of the toxic principle of the monkshood, which is aconitine.

The next order are the poppy tribe. I have never seen cases of poisoning from these. The great celandine also comes under this order. H. Caulton Reeks describes cases of poisoning of cows by this plant, the symptoms noticed by him being drowsiness, salivation, uncertain gait and active kidneys, death occurring within two hours.

The next order is the Cruciferæ, and under this heading come the cabbage, mustard, and like plants. My only experience of mustard poisoning has been in sheep, in a flock of ewes, where the mustard had got very old and tough. The animals showed loss of appetite and purgation. *Post-mortem* revealed inflammation of the true stomach and kidneys. On removing the ewes from the mustard, deaths ceased. These ewes were in poor condition, and had been on the mustard for a week or ten days before symptoms occurred. The horse-radish also comes under this order and cases have been recorded of poisoning from this.

The next order is the Leguminosæ, to which the broom and laburnum belong. A good many cases are on record of laburnum poisoning, the seeds being particularly toxic. As far as broom is concerned, I have never diagnosed poisoning by this, but cases have been recorded.

The cherry laurel is responsible for a good many deaths. The symptoms are paralysis, convulsions, and dilatation of the pupils, the toxic principle being the prussic acid which is formed.

Bryony. We have two kinds of bryony, the black and white; the white is easily distinguished in the autumn by its large clusters of red berries. I cannot say that I have seen poisoning definitely by the bryonys. I have been very suspicious of them, though they have always been mixed with other poisonous plants; but that animals will eat them is clearly proved by the bitten ends of the plants which are left, afterwards having been seen.

Perhaps one of the most poisonous families of plants with which we have to deal are the Umbelliferæ; these include cowbane, water hemlock, water dropwort, fool's parsley, the chervils, and ordinary hemlock.

As regard cowbane, water parsnip and water dropwort, these are all exceedingly poisonous, but although being suspicious about these plants, I cannot say definitely that I have seen poisoning by them.

Concerning the chervils, although in the literature doubt is expressed as to their toxicity, I have on several occasions had cases of death after these have been eaten by animals, the symptoms being more or less paralysis of the bowels, dilation of the pupils and trembling, and staggering gait. *Post-mortem* showed gastritis and enteritis.

As regards hemlock, I suppose there is no plant more widely known and with a more evil reputation, but up to the present time I have never definitely seen a case of hemlock poisoning in animals. The symptoms of poison given by Lander are nausea, accelerated respirations, dyspnœa, paralysis (particularly of the posterior members), trembling and difficulty in walking. The symptoms are almost identical to the symptoms of chervil poisoning, but I think I am right in stating that the toxic principle of the chervils is unknown; the toxic principle of hemlock, however, is conine.

Our next order is Compositæ, and the particular plant I want to mention in this order is ragwort. I have seen poisoning by this several times, my most noticeable experience being the loss of six or seven horses from ragwort in the dried state given in the hay—I do not think animals will eat this plant in the natural state, except in the very dry summer. The following cases of plant poisoning were described by me in the *Veterinary Journal* in January, 1924, and I do not think I can do better than give you a summary of the cases recorded.

The first case was seen by my assistant about the end of January, 1923, the animal showing ordinary symptoms of colic, with the addition of severe purgation. Peritonitis was diagnosed and sedative treatment was given, but the animal died and no *post-mortem* was made. Case No. 2 occurred some time after. This mare was taken with slow dull pains, her mucous membranes were deeply injected, her pulse 60 and her temperature 104°. At this stage no purgation was present, the mare did not respond to treatment, and lingered on for just over two weeks. During the treatment of this last case another horse was taken ill showing identical symptoms to the former. In the third and fourth animals and also the next case mentioned later on, in the later stages of the illness the brain became affected and the animals practically went mad, rearing up against the wall, so that during the last twenty-four hours it was almost impossible to go near them. It was during the treatment of these cases that I began to be suspicious that the cause of the trouble was something the animals had eaten. After exhaustive enquiries it was found that, on account of the exceedingly dry summer the previous year, the steward, anxious to make all the hay

he could for the coming winter, had shut up rather a bare piece of grass on some very light land for this purpose, and the animals had begun to be fed on this hay about the middle of the following November. Most of this had been cut unto chaff, and of even this the animals left a good deal. Attention had been drawn to this by one of the team-men, but the only answer he got from the steward was, that if they would not eat it, they must leave it. During the illness of No. 3 case I suggested an examination of the five remaining horses on the farm. The result of this was to pick out cases No. 4 and No. 5 which, to all appearances, were normal and healthy, but which on closer inspection were found to be a long way from well, the visible mucous membranes being deeply injected, and of a very yellow colour, the pulse about 80 and the temperature one or two degrees higher than normal. No. 4 case showed definite symptoms of illness a few days after this, but Case No. 5 did not show any symptoms of illness until three weeks later on. *Post-mortem* examination was made on the last three cases and the only organ affected was the liver, which was tremendously enlarged, and, when cut into, appeared very gritty. It took nearly three months after the animals had begun to be fed on the hay containing the ragwort before the first symptoms of illness were noticed, and over six months elapsed before the death of the last animals, clearly showing that ragwort is a cumulative poison.

Rhododendron is another fruitful source of poison. I have only seen one or two cases of rhododendron poisoning, when the animals (young stock) had broken out and been out all night, and were found down, and in a comatose and moribund condition. The remaining animals did not appear to have taken much harm; probably they had not eaten much of it.

The next order is the Solanaceæ, which, like the order Umbelliferæ, contains a great quantity of poisonous plants, amongst them being the thornapple, henbane, bittersweet, and the potato. I have had no experience of poisoning amongst these plants, therefore I do not propose to make any further reference to them. The foxglove is another very poisonous plant, and of this I have had no experience.

The next one I come to is dog's mercury, of the natural order Euphorbiaceæ, and from this plant I have seen a good deal of poisoning. In this case the poisoning had always occurred through the dog's mercury being collected in ditch trimmings, or trimmings from borders, and cut up with the other food. The poisonous properties are said to be due to mercurialine. I have not seen any cases of poisoning from this for the last twenty years, but in several hot summers a number of cases occurred when feed was short. Like ragwort, this poison is undoubtedly cumulative, and, as is seen in ragwort poisoning, the liver seems to be one of the chief organs affected. But the most diagnostic symptom after the ingestion of this plant is the intense black colour of the urine (I am now speaking of the horse) which colour, after a brisk dose of physic, disappears after four or five days. The first symptoms noticed are distension of the body, purgation, and the intense black colour of the urine. After the cause had been removed the animals which are going to recover generally do so in from four to five days to a week, but in some cases—I take it where the animals have eaten sufficient of the mercury to cause organic changes in the liver—they show signs of unthriftiness, loss of appetite, dull pains, thready pulse, and finally die. On *post-mortem* examination the chief change is found in the liver, which is tremendously enlarged. I have never seen a case of dog's mercury poisoning affecting bovines.

As regards the grasses, I have purposely omitted these. I am now speaking of the better-quality grasses. We get the so-called grass sickness, of which I have seen a good many cases in West Norfolk, but I am always doubtful in my own mind as to whether or not grasses have anything to do with this complaint. They may have, but I very much doubt it, and give no suggestion whatever as to the cause of it. It is a remarkable thing that in all the pastures on which symptoms have occurred, these same pastures have been grazed for a great number of years without any ill-effects, and why animals that are put on these pastures should suddenly be affected with so-called grass sickness, I am quite at a loss to understand. It has been suggested that the so-called grass sickness is due to hemlock poisoning, but I am quite certain that this is not correct, as in the great number of cases of grass sickness that I have seen, there has not been the slightest trace of hemlock present.

We next come to bracken. I have seen but one outbreak of poisoning which I can definitely associate with bracken, and that was last summer-time, amongst sixteen bullocks. The remarkable feature of these cases was that no symptoms of poisoning were shown in these bullocks until more than two weeks after the animals had been removed from access to the bracken. These cases occurred in Mr. Bray's practice at Docking, and I do not think I can do better than give you Mr. Bray's account of the cases. He says:—"On August 13th, 1928, I was called to see sixteen bullocks. At 8-30 a.m. a severe thunderstorm passed over the pasture and one was found dead at 3-30. Microscopic examination for anthrax was negative. All the other bullocks appeared to be perfectly healthy. On August 17th, No. 2, found dying by the steward, was slaughtered and dressed. No. 3 was also slaughtered and dressed. I tried to see the viscera of No. 2, but it had been buried. Two large blood clots, 8in. by 3, were produced for inspection from the abdominal cavity; the spleen was hung up and was normal; a swab taken from this gave negative results for anthrax.

"No. 3 carcase was wet and greenish. Blood, and blood clots, were present in large quantities in the intestinal tract. I recovered what I took to be bracken stems from the rumen.

"The Institute of Animal Pathology reported on the 22nd that the specimen I sent was not bracken, but some umbelliferous plant. Other plants present to which animals had access in the pasture were ragwort, bryony, dead hemlock and upright hedge parsley. On August 18th the temperatures of sixteen bullocks were taken; five were 102°, one was 108°. All seemed normal except the one with 108° temperature, which died on the 22nd."

I saw these bullocks on the 24th inst., in consultation with Mr. Bray, and took the temperatures of seven bullocks; six were 104°, and one 108°. On August 28th the bullock with 108° temperature, and another one, were seen lying about frequently, and were generally uneasy

but responded to treatment and were turned out again. On September 8th the temperatures of these bullocks were taken and were normal, except one which was 103°. All the sixteen bullocks had been turned on a common, where there was a large quantity of bracken, which they had undoubtedly eaten, but they had been moved on to the pasture a fortnight before the death of the first bullock on August 13th. There were no further deaths until August 17th, when two more died. Blood stains and blood clots were found on the pasture. What struck me, personally, was the very high temperature in two or three of them, and the excessive number of blood clots which were being passed by these animals with very little signs of ill health. I was able to see the viscera of one bullock and the whole of the organs appeared normal, except the bowels, which were rather congested, and full of clotted blood. The poisonous principle of bracken is given as filicic acid and the bracken seems to be more poisonous when it is beginning to turn brown at the beginning of the autumn.

The last order to which I shall refer is the Coniferæ. The shrub in this order which is very well known, and perhaps causes a great amount of loss, is the common yew, of which there are a good many varieties. I have no doubt all of you, at sometime or other, have met with deaths caused by yew poisoning. Both cattle and horses will eat the twigs of this shrub when opportunity occurs, and a good deal of controversy has arisen as to which part of the yew, excluding the root, is the most poisonous; but I think it will be readily agreed that it does not take a great quantity of yew for fatal results to follow. A good many people say that the dried yew is more poisonous than the green; whether this is the case or not, I cannot say; anyhow, symptoms are shown very rapidly after ingestion, and deaths occur very suddenly, with practically no warning. Taxine is the poisonous alkaloid present in the yew. Yew poisoning can generally be fully proved by *post-mortem*, as the needle-shaped leaves of the yew are readily found in the ingesta of the stomach, which is always very much inflamed. The lungs and liver are also engorged with dark tarry blood. *Post-mortem* symptoms point very much to the animal having died from apoplexy.

Into the subject of acorn poisoning I do not propose to enter. It is very well known to everyone, and generally met with in certain seasons of the year, more especially when acorns are blown down in their green state after a gale.

Beet* poisoning, also, I shall not say much about—the vagaries of beet are well known to all of us—but while on this subject I may say that three or four years ago I met with two very peculiar outbreaks of poisoning which were ascribed to beet. One Boxing Day I was requested to go to a sewage farm to inspect some young stock, aged twelve to fifteen months' old, which had died suddenly. On arrival I found ten or eleven young bullocks all lying dead in a bullock yard, a peculiarity of the deaths being that had the animals been electrocuted they could not have died more suddenly, as the lodge under which they all lay dead was covered with dust, and in no single case were there any marks on the dust indicating signs of a struggle having taken place prior to death. *Post-mortem* examination revealed nothing wrong. One of the animals was immediately packed in a motor lorry and sent off to the Veterinary College for further examination, but the report received was negative. The only solution I could arrive at was that the young animals, which were shut up in some off premises, that day being a holiday (Boxing Day), had been given double rations of beet and hay chaff the first thing in the morning, so that the attendants need not trouble about feeding them in the middle of the day, as was usual. They were not seen again until late in the afternoon, when, as stated above, ten or eleven were found dead. I may say that it was not unusual on this particular farm now and then to get cases suddenly taking place in winter months amongst the cows, when one or more of them would start scouring (with dark, fœtid, black-looking scour), show signs of great depression, slow dull pains, distension of abdomen, rapid pulse, subnormal temperature and cold extremities. Strict search was made with regard to the food and water, but no definite cause could be found for the symptoms, although I always suspected the beet grown on the farm as the possible cause of the trouble. Animals usually died from twelve to forty-eight hours after, and those that did recover were very slow in doing so. *Post-mortem* examination showed signs of inflammation of stomach and bowels; other organs normal.

The next case occurred amongst a number of pigs. Some of the beet from the sewage farm had been purchased by the owner of the pigs, which he boiled for them, and within an hour or two after the first meal, seven or eight large pigs were found dead, and a good many others were showing severe symptoms of illness. *Post-mortem* revealed intense inflammation of the stomach and intestines. It is very evident that, whatever was the poisonous product contained in the beet, it seemed to be much intensified by the process of boiling.

These rough notes of cases actually met with in my own experience are, I must admit, very incomplete, and I have tried not to enter into a lot of useless detail in connection with them.

I know very well that all of you must, at one time or another, have met with some cases of plant poisoning, and I do hope you will now give us the opportunity of hearing further about the poisonous effects of those plants I have already mentioned, or of others I have not mentioned, so that we can have a really good discussion, and all of us go away with the feeling we have not wasted our time in coming here to-day.

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The value and interest of the paper, and of the discussion upon it (the report of which is reproduced below) were much enhanced by an exhibition of beautifully-mounted specimens, staged by Mr. Herbert Buckingham, of Norwich, and of numerous specimens in the fresh state which were brought by the essayist and many other members.

The specimens included:—*Aconitum napellus* (monk's-hood), *Æthusa cynapium* (fool's parsley), *Anagallis arvensis* (scarlet pimpernel), *Atropa belladonna* (deadly nightshade), Birthwort, *Bryonia dioica* (white bryony),

*Readers should note that the term "beet" is employed in the Eastern Counties to denote mangel-wurzle, "beet" being always spoken of as "sugar-beet." For "beet," therefore, read "mangel-wurzel" throughout paper and report of discussion.

Chærophyllum sylvestre (wild chervil), *Chærophyllum temulum* (hedge parsley), *Chelidonium majus* (greater celandine), *Colchicum autumnale* (Autumn crocus or meadow saffron), *Conium maculatum* (spotted hemlock), *Datura stramonium* (thorn-apple), *Delphinium agacis* (larkspur), *Digitalis purpurea* (purple foxglove), *Equisetum palustre* (horse tail), *Euphorbia exigua* (spurge, or milk-wort), *Helleborus fœtidus* (stinking hellebore), *Helleborus nigrum* (black hellebore), *Helleborus viridis* (green hellebore) *Hydro-cotyle vulgaris* (white-rot or marsh pennywort), *Hyoscyamus niger* (common henbane), *Lolium tenulentum* (darnel), *Mercurialis perennis* (dog's mercury), *Œnanthe crocata* (water dropwort), *Paris quadrifolia* (herb Paris), *Prunus laurocerasus* (cherry laurel), *Pteras aquilina* (bracken), *Quercus robur* (oak), *Ranunculus aceris* (corn crowfoot), *Ranunculus sceleratus* (celery-leaved buttercup), Rhododendron, *Rumey acetosa* (sorrel dock), *Solanum dulcamara* (woody nightshade), *Solanum nigrum* (black nightshade), *Taxus baccata*, *Taxus communis* (common yew), and *Tenacetum vulgare* (tansy).

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Discussion.

The President (Major T. G. Heatley) said that he thought perhaps he might open the discussion by making a few observations on cases with which he had met. The very first case of poisoning he could remember was by *Colchicum autumnale*—the meadow saffron, which occurred the first week in June. Six young cattle were taken ill, and on *post-mortem* he recovered some of the broken-up colchicum capsules from the stomachs, and the principal finding was gastritis, with inability to stand. He felt that the Division were particularly fortunate that day in that they had with them a gentleman—Mr. Newman, of Cambridge, who was a past master of all botanical work, and he was sure that if any member desired any information on any particular point, Mr. Newman would be only too glad to render any assistance in his power. He welcomed Mr. Newman's presence amongst them that afternoon, and took it as a great compliment, both to himself and to the Division. (Hear, hear.)

Proceeding, the President said that he had also seen a few cases of poisoning with the ordinary blue lupin, when the plants were forward in growth, and showing seed pods. This plant is largely grown on poor light land as feed for sheep.

He remembered, years ago, driving along a road and seeing a number of ewes going along as though they were drunk. Apparently lupins would affect sheep in that way. He had not seen aconite poisoning, from eating the plant, but probably some animals had more susceptibility to it than others, as he once saw very alarming symptoms in a hunter, from the administration of 10 minims of Fleming's tincture. A mixture of iodine and aconite was sometimes used by dentists to stop toothache, and in his own experience he had annoying symptoms of repeated attempted deglutition for half an hour after its use.

He would mention another poisonous substance, which they did not find in this country, and that was the Indian mutter pea, which was occasionally responsible for trouble following its use as food. A few years ago a number of losses occurred from this cause in Norfolk. He did not see the animals until they had been showing symptoms for some time, and several deaths had occurred. Even then they appeared all right until they were lunged, when, after about two turns, they would almost drop, through inability to get their breath.

As regards bracken poisoning, in his district there was a long belt of bracken land running parallel to the coast, and the farms bordering on that land were very light, so that the bracken had to be harvested largely, to eke out the bedding. Yet in forty years he had never met with a case in which he could incriminate eating of the bracken as a cause of illness. Another rather interesting thing was a case which occurred a number of years ago, when he was called to a colt which was showing symptoms of colic, with paralysis and a sub-normal temperature. He found that this animal had been grazing off the water hemlock. It died, and on *post-mortem* he found some of the leaves of the plant in the stomach. The interesting point about that was that he asked the marsh-man to try and find him a specimen plant to show at that meeting, but the plant he sent was not the *Cicuta virosa*, but another poisonous plant, *viz.*, the celery-leaved buttercup *Ranunculus sceleratus*.

Mr. Standley had mentioned beet poisoning. During the last year he (the President) had seen three cases in which, although there were no deaths, there was serious indigestion. The symptoms were loss of milk, loss of appetite, staring coat and all-round stiffness. After a good dose of opening medicine the animals were soon all right again. With those few remarks, he hoped that others would be urged to make their observations on the very informative paper with which Mr. Standley had favoured them.

Mr. C. C. Nesling remarked that he was very pleased to hear Mr. Standley mention dog's mercury, for in the spring of each year he always had a few cases of cows kicking at the belly and scouring, which he now believed was due to the ingestion of this plant—a specimen of which he sent to the Ipswich Museum for identification. Previous to this he had not known what it was that caused the mischief. A quart of linseed oil generally put the animal right in a day or two. He had never, to his knowledge, seen a case of poisoning by dog's mercury in the horse.

Mr. Herbert Buckingham said that they were all deeply indebted to Mr. Standley for his concise, comprehensive and instructive paper. (Applause.) So thoroughly had the essayist dealt with those features of his subject with which he had concerned himself that he (Mr. Buckingham) felt that little room had been left him for making comment or suggestion, though he hoped that others would do so.

Two cases of poisoning occurred to him as being of particular interest. In one, *Colchicum autumnale* was the plant concerned, and it grew freely in the garden and ruins of an old house situated in the corner of a meadow of a small farm. Four cows had been turned into this meadow in the springtime, when the green clumps of autumn crocus leaves were coming up, and three of them died, one recovering after a severe attack of illness. The animals that died did so rapidly, and the symptoms were severe diarrhœa, with the passing of blood, great weakness, accelerated pulse rate, and the temperature raised two or three degrees above normal. On *post-mortem* he found some of the undigested leaves in the stomachs. There was blood in the digestive organs and the abdominal viscera showed intense inflammation. The plants were all dug up, but the autumn crocus was exceedingly difficult to eradicate.

He was quite young at the time of the occurrence of the other case, but he remembered it well. A hackney horse had a chronic cough, which the owner treated himself for a considerable time. Eventually the horse was taken ill and he (Mr. Buckingham) was called in. He found that the horse had been receiving a drachm of the powdered leaves of the *Digitalis purpurea*, in bolus form, night and morning. On the fourth day of this procedure the animal had commenced to show signs of illness, and that was the day upon which he was called in. There was slight uneasiness, respirations were increased, and the horse was perspiring freely at the flank, near the elbows and round the ears. The pulse, which was intermittent, gradually became imperceptible, and the animal died within twenty-four hours of the time that he saw it first.

He had, in his life, seen one distinct case of hemlock poisoning, and that was amongst a number of rabbits, to which the plant had been given by accident. They all recovered.

He remembered one case of definite acorn poisoning. Forty bullocks on a farm were taken ill, and some undigested pieces of acorn were passed with the fæces, in

which blood was present. After treatment, recovery was effected. He had met with one case of yew poisoning in pigs, resulting from the clippings from a garden hedge being thrown into the sty.

Replying to the President, who enquired of him his opinion of the ingestion by poultry of large quantities of laburnum seeds, Mr. L. F. NEWMAN, of the School of Agriculture, Cambridge, said that of course poultry were very much more tolerant of many poisons than were mammals, but there were several cases every year of illness in children due to the eating of the seeds of laburnum. He always asked poultry people, when birds had died mysteriously, to send him the whole bird, or at least its whole digestive tract, and in one or two cases he had identified laburnum seeds, but he would not care to base an opinion on that. This was, indeed, a question that required carefully looking into, in view of the possibility of poultry picking up seeds from trees growing near yards or runs. The number of seeds requisite to produce toxic symptoms in man were very few—probably four or five, and even allowing for the great tolerance of birds to many poisons, he thought it quite possible that some amongst the many cases of death in poultry which had been brought to his notice might be attributed to the ingestion of laburnum seeds.

Mr. H. L. ROBERTS added an expression of thanks to those of previous speakers and continued by saying that Mr. Standley had covered so much ground that it would be impossible for one to deal adequately with the many practical points which had arisen. He would like to say a word, however, about meadow saffron poisoning, though fortunately they did not see much of it in the Eastern Counties. During his pupilage days in Shropshire several cases occurred in the practice in which he was stationed, and they occurred during the last week in May. As Mr. Buckingham had said, the plant grew in clumps or patches, and it was the leaves which appeared to contain the toxic principle. The symptoms were just as Mr. Buckingham had related them ; giving the impression (as they always did, to his mind) that one was dealing with a case of suspected anthrax, in 75 per cent. of which cases one found, however, when one arrived, that the animal was dead, with the passage of blood from the natural orifices.

In further reference to the poisoning of cattle, it was a common and dangerous practice to throw plants from gardens on to pasture. As an instance, he could state that during the past thirty years he had had two cases of acute poisoning, due to the ingestion of wallflowers. He noticed that, when speaking of rhododendron poisoning, the essayist did not, from his experience, tell them of the symptoms exhibited by cattle which had eaten the leaves and shoots. He thought that toxicologists would agree with him that such cattle salivated freely, and that in the saliva and vomit would be found, in every case, the buds of the rhododendron plant. That was a great help in diagnosis in animals that had not succumbed. With regard to other forms of poisoning in animals with which they met, they knew from the researches of the late Sir Stewart Stockman, that the common ragwort, getting into hay, did give rise to chronic symptoms and ultimately kill domesticated animals by producing alterations in the structure of the liver. On the other hand, he had a case at Stowmarket last year in which he was called in to see animals which had been ill only three days, and in which the symptoms seemed to point to the action of a vegetable poison, but there was great costiveness, though in many instances of vegetable poisoning diarrhœa and not costiveness was the predominant symptom. Having ventured the opinion that the condition might be ragwort poisoning, he began to make enquiries, thinking that perhaps they had been cutting round the meadows where there might have been some ragwort and that this might have been collected, before it was properly dried, for the young bullocks to eat. With the judicious exhibition of Glauber's salts, however, all the bullocks recovered.

Mr. W. TURTILL related a case of bracken poisoning which had occurred in his practice only the previous week. The animals had been driven to eat this bracken by the poor, dried-up pasture, the owner having neglected to move them when advised to do so. When, eventually, he did move them—and not till then—two of the animals died, and, shortly after, two more. The owner thought they had anthrax. On *post-mortem* he found the stomach inflamed, and all the serous membranes spotted with petechial hæmorrhages—also extravasations of blood from several of the organs and under the skin. He came to the conclusion that the condition was poisoning of some sort, and on looking round the farm he had no alternative but to incriminate the bracken. The animals continued to die, and he made another *post-mortem*, with precisely similar findings. All the animals were passing blood from the mouth, nose and anus. Eventually their president, Mr. Heatley, suggested that he should try to get Professor Buxton to come over, and the latter very kindly came. He was pleased to say that the professor came to the same conclusion that he had done. Seven out of nine animals had died, and the other two would do so. That was bracken poisoning.

In a country practice, in the course of a good many years, one met with many cases of poisoning in animals. He had already instanced poisoning from bracken, but there were cases due to meadow saffron, to beet, and to acorns. A diagnostic symptom in beet poisoning was a peculiar stiffness in the shoulders. Then he had had many cases of hemlock poisoning. Reverting to the cases of bracken poisoning, the deaths began to occur a week or ten days after the animals had been taken off the bracken, which showed that the poison was of a dangerously cumulative nature.

Proceeding, Mr. Turtill stated that he had had two deaths in fillies from eating ivy berries, and they showed acute symptoms of gripes with stoppage. He had also had serious trouble amongst calves with prussic acid poisoning, several Shorthorns dying as the result of the practice of making an emulsion of the linseed cake. In his district there were several parks, and there had been many deaths amongst the deer and beasts there, these animals having been able to push their heads through the railings and to get at the yew. He had seen as many as four and five deer lying dead in the morning from this cause.

The speaker congratulated the essayist on his paper, and other members also upon the excellent display of poisonous plants which had been brought for the purpose of illustrating the subject they were considering that afternoon.

The PRESIDENT remarked that it was interesting to hear that Mr. Turtill had had cases of bracken poisoning so recently, and had had Professor Buxton to assist him in the elucidation of the problem thus presented. He was under the impression that there had been a great deal of controversy as to whether there was such a thing as bracken poisoning, or whether the deaths in which bracken ingestion was suspected as the cause were, in reality, due to something else. Be that as it might, he was going to ask Professor Buxton, because he had so recently seen these cases, to say a word about the condition.

Professor J. B. BUXTON said that there had been from time to time a considerable amount of argument as to whether or not the condition they were discussing might be hæmorrhagic septicæmia, and that some individuals apparently yet maintained that it was in fact hæmorrhagic septicæmia, and not bracken poisoning at all. Because of the many points in connection with bracken poisoning which were sometimes difficult to interpret, they, in fact, still questioned if bracken was indeed poisonous to cattle. He thought they should, in the first place, recall the observations made by the late Sir Stewart Stockman. By feeding bracken of varying age to a number of bovines he was able to reproduce, experimentally, the clinical picture observed in supposed natural cases of poisoning. He established the fact that bracken could be poisonous to cattle, and he confirmed the nature of the lesions produced by that poisoning. The existence of bracken poisoning must be accepted. It was true that the symptoms and lesions of bracken poisoning resembled to some extent those of hæmorrhagic septicæmia. Sir John M'Fadyean had

stated authoritatively that, in his experience, hæmorrhagic septicæmia of cattle had not been seen in this country, and during the past twenty years he (Professor Buxton) had not met with a case. Having regard to the circumstances detailed in the narrative of the outbreak in Mr. Turtill's practice, one could not suppose that the condition was other than bracken poisoning; it certainly was not hæmorrhagic septicæmia.

He thought there could be no doubt that confusion had arisen in the minds of some owing to the fact that a microscopic examination of the blood of animals dead of bracken poisoning not infrequently revealed the presence of numbers of bi-polar staining organisms closely resembling the causal organism of hæmorrhagic septicæmia. But these were by no means the only organisms present. One of the difficulties with which one had to contend in making a *post-mortem* examination of such a carcase was the rapidity with which decomposition had progressed and the consequent invasion of the tissues by intestinal organisms. Indeed, in such carcases it not infrequently appeared at first sight as though the animal had succumbed to an anærobic infection. The whole point was that the bi-polar staining organisms so often met with in these and other cases were soil organisms, intestinal organisms, which might be looked for in those cases in which putrefaction was proceeding. This invasion of the body by intestinal organisms was hardly to be wondered at when they called to mind the extensive damage of the intestinal walls which—in his opinion—occurred some time before death.

If he might be permitted to say a word in general regarding plant poisoning in animals, it would be that he came there with the definite object of learning something, because, as they well knew, their knowledge of that subject was extremely meagre; it was gleaned from clinical descriptions of *post-mortem* findings, and in large part from foreign text books. Not for one moment did he deny the value of clinical descriptions, far from it, but he did appreciate the very great difficulty of accurately describing lesions in animals which had been dead from a poison even for a very few hours. Accurate information could only be obtained by the experimental reproduction of the symptoms and lesions. It would interest them to know that representations had been made to the Ministry of Agriculture urging the necessity for a more extensive knowledge of plant poisoning in farm animals, and that as a result he hoped that in the not far distant future it might be possible to undertake some investigations in that direction.

Mr. W. Waters asked Mr. Standley if he thought that the common charlock was really poisonous to farm animals. He had never thought that such a thing was possible until a few weeks ago, when he had a peculiar case of poisoning in pigs. After making exhaustive enquiries as to the methods in which the pigs had been fed, he found that they had been given field peas, and mixed with the peas was a lot of both white and yellow charlock, which was all in seed. It was not until he looked it up that he remembered that wild charlock was the wild mustard, and the symptoms were those of gastro-enteritis, while they all had pneumonia, in addition. Personally, he never thought that so common a plant as charlock could be poisonous and he was rather surprised, on looking it up, to find that under certain conditions it could be.

Mr. H. V. Low thought that one or two cases which had occurred in his practice, at different times, might be of interest to the members. One case concerned beet poisoning in pigs. In this case twenty-seven pigs were found dead, with no appearance of any struggling. These pigs had been fed on boiled beet with a small quantity of meal, given cold. About December 20th, 1917, the weather was very cold, and it was arranged to keep the copper fire alight during the night to feed the pigs on warm food in the morning. The twenty-seven pigs were fed before breakfast, and on the return of the attendant from his breakfast they were all dead. The attendant did not associate the deaths of the pigs with the food, so proceeded to feed the rest of the pigs on the premises—one boar, ten sows, eleven unweaned, thirty-four fat, and forty stores—on the same food, which had by this time become cold. This was the extraordinary point in this case, that no more deaths occurred, and the pigs did not suffer in any way. The *post-mortem* examinations on the twenty-seven dead pigs did not show any lesions to account for the deaths, all organs being perfectly normal.

He did not know whether or not it was generally known, but he had had the experience that mares in foal, when fed on beet, would produce weakling foals, which lived about twenty-four hours and died quietly.

Concerning yew poisoning, he thought he was correct in stating that at the time he was at the Royal Veterinary College there was a claim for yew poisoning in cattle in the Midlands. Two or three of the professors from the college were called in, and diagnosed yew poisoning as the cause of the deaths. The question then arose, as to how much yew it was necessary for an animal to eat to cause death. The college authorities purchased two steers in very poor condition, and brought them to the college. Yew was obtained from the field where the poisoning took place in the Midlands; it was carefully weighed out, and the two bullocks were fed on one pound each per day. This was gradually increased until they were fed on a fork full every day with no ill effects; in fact, they got quite fat, and were eventually sold for beef. He mentioned this incident as he considered it might be of interest with regard to the recent experiments that had been carried out in Norfolk regarding hemlock poisoning. It occurred to him that if animals were fed on a poisonous weed or plant in small quantities to start with and the allowance gradually increased, it was possible that they might become immune to the effects.

Some years ago he treated a horse suffering from locomotor ataxia with Prof. Macqueen's treatment—strychnine. This horse was so helpless that it took eight men to unload him out of the float and get him into a loose box. He started him on one grain twice a day for a week, and gradually increased the dose, until he gave him nine grains of strychnine in bolus twice a day for two days before any symptoms of poisoning appeared. Then the symptoms did appear, and he was allowed to remain under the influence of the poison for about ten minutes, when he gave him him one ounce of chloral hyd. in a pint of water per rectum, as it was dangerous to try and give him a drink. In about fifteen minutes after receiving the chloral, the symptoms passed off, and the horse became normal. From this day he put him on two grains twice a day, and continued the treatment for about a month, when the horse was sent home perfectly sound, and the owner sold him for £120.

He mentioned this as another example of the enormous amount of a poison an animal could consume if gradually increased doses were given. He did not say that that applied to all poisons or poisonous plants, but he was of opinion that when one met with fatal cases of poisoning, in most cases it was where a considerable quantity of the poisonous plant had been consumed, and that it was the first time the animals turned out on that particular pasture had ever been known to touch it.

While on that most important and interesting subject of poisoning in animals, he would like to record a very extraordinary case he had some time ago. A man had some pigs on an allotment and collected swill in the district. He was called in and found ten strong store pigs dead. He enquired into the circumstances, and the owner informed him that he had boiled the swill in a copper with the lid on and carefully packed it up with sacks "to keep the goodness in" (as he put it). He fed ten strong store pigs on this boiled swill (cold) and went indoors and had his dinner. In twenty minutes he came out to see if the pigs had eaten all the food, and found the ten pigs all dead. He (Mr. Low) made the *post-mortem* examinations on all of them, but there were no lesions to account for the deaths. He therefore concluded that the pigs died from ptomaine poisoning. That incident brought up the subject of when, and from what cause, poisonous cases occurred, as those pigs had been fed on that swill under the same conditions for some weeks and had thrived on it.

Capt. P. R. Turner thanked the essayist for his paper, and Mr. Buckingham and other members for their poisonous

plant exhibits, and proceeded to say that now the pastures were all dried up on account of want of rain, there was undoubtedly a greater risk of plant poisoning because of the inclination of stock to browse around the hedgerows and ditches. He was, however, even so inclined to think that sometimes poisonous plants were wrongly blamed for obscure diseases which occurred in turned-out stock, and before any plant could be deemed culpable there must be distinct evidence of quantities of that plant having been eaten. The plant that had caused him most trouble was that which he now held in his hand, and which he always thought was a species of hemlock, but he now saw it was not the true hemlock, but common hedge parsley (*Cærophyllum temulum*). The chief symptoms were those described by Mr. Standley under the heading of hemlock, *viz.*, complete stasis of the alimentary tract and clonic twitchings of various groups of muscles, particularly those of the shoulder. In the cases he had met with, in addition to gastro-enteritis, the outstanding feature had been a peculiar stickiness of the mucous membrane of the bowel wall of the cæcum and colon. In one case, in which he was much criticised for blaming this plant for the loss of eight horses, the stomach and intestines of one were submitted to Dr. Lander, of the Royal Veterinary College, for analysis. He reported the presence of the alkaloid conine, and gave it as his opinion that it was present in sufficient quantities to cause death.

Another plant which he sometimes blamed for causing trouble was the cuckoo plant, while he would also like to know a little more about potato poisoning. Also, when the President referred to lupin, did he mean the common garden lupin ?

The PRESIDENT: No. The lupin referred to was not grown in Mr. Turner's neighbourhood, as the soil was capable of growing something better.

At this stage in the discussion Mr. STANDLEY, senr., remarked that it had only just come to his notice that experiments in feeding two horses on hemlock had been completed. The experiments took place in connection with several outbreaks of grass sickness which occurred last summer in West Norfolk. At several farms in a locality horses died from typical symptoms of so-called grass poisoning, diagnosed by four veterinary surgeons. One of the owners of four or five horses which died, was inclined to doubt the accuracy of this diagnosis, and rather thought hemlock poisoning was the cause of the trouble. Experiments were therefore carried out to see if feeding horses on hemlock would produce similar symptoms.

Mr. Newman, of Cambridge, who superintended this feeding, was with them that day, and Mr. Standley hoped he would give the meeting his conclusions arrived at from the result of those tests.

Mr. L. F. NEWMAN, of the School of Agriculture, Cambridge, said that he had come there to listen and to learn, and not to have to talk, and it was rather a surprise to be "put up." However, he had learned an enormous amount that afternoon, and one or two things had especially struck him. He would like to say, to begin with, that he did not want them to go away with the idea that he or others interested in the subject were in any way taking on professional work in following up cases of poisoning in animals. There was the botanical and toxicological interest, and there was no intention of trespassing on professional duties. He would like to emphasise very strongly what Professor Buxton had said about the necessity for information in regard to the identification of poisonous plants alleged to have caused specific instances of animal illness.

He was glad to say that it was partly due to his stressing of that point, and the necessity of obtaining definite data to assist veterinary toxicologists, that the Ministry had decided to take steps, and he hoped that they were going to hand the matter over to Professor Buxton to deal with. He was sure that the result would be the production of some valuable and sound data. (Applause.)

Concerning the particular cases in West Norfolk to which the reader of the paper that afternoon had made reference, the owner whose animals were in question was a very old friend of his, and when those cases of death occurred he came to him, not in any professional sense, but merely as a matter of friendship and as being engaged in the pursuit of general knowledge of plant poisons.

The whole of his farm was simply over-run with hemlock —young yearling plants as well as the flowering stages, and it was a well-known fact that young hemlock had not the nauseous, mousy taste of the older plant. The symptoms exhibited by the animals agreed sufficiently closely with the written descriptions of hemlock poisoning to render a diagnosis of hemlock poisoning allowable. But the point he wanted to make was that while some instances might be described as being due to hemlock poisoning on diagnosis only, in these particular cases—some half-dozen horses—not only were there plenty of plants growing amongst the clover and showing that it had been eaten off, but that, being present at the *post-mortem*, he took some of the stomach and gut contents back to his laboratory for examination, and by microscopic and chemical examination means found evidence of the presence of any amount of it. He fed various umbelliferous plants, including hemlock, to rabbits, and made a collection of partly digested material from the stomach and gut, and worked on that (for comparison—each species fed separately). Secondly, conine was the active principle of the hemlock plant, and this could easily be distilled from soda in steam, and he identified it chemically. Moreover, he took some of the distillate to Professor Dixon, the distinguished Cambridge toxicologist and chemist, and he identified it and gave him a certificate of the amount of conine present in the distillate. There were from .1 to .2 milligrammes in each c.c. of the distillate (100 c.c. obtained from a pound of gut contents), and that would yield a large amount when the great volume of ingesta in the alimentary canal of the equine was considered. Whenever a case presented itself, he went round the fields and in nearly every instance found hemlock in abundance—though it was a very easy thing to miss—then he took some of the hemlock home and fed it to rabbits to determine the toxicity. The growing season was very short for hemlock, and they had to use larger and larger doses towards the end of the season. This year, in conjunction with the owner of the horses dying the year before, he obtained some hemlock in the early stages of the season, and they brought a horse (rather an old one, but quite sound and suitable for the purpose), and they fed it on small quantities of hemlock and clover every day. After the first day the horse took the hemlock quite readily, and he thought, therefore, that they could take it for granted that once an animal had tasted it there was no reason why he should not go on eating it, if it was to be had. They started off by giving the mare 4 lbs. of hemlock a day, for ten days ; the figure given by one of the veterinary toxicologists as the lethal dose for the horse was 5½ pounds. They gave nearly 40 lbs. spread over ten days, but she showed no well-marked symptoms. Then they gave another horse an enormous dose and, in fact, gave him the distillate of some hemlock seeds in addition to fresh plants. He did not mind eating the plants at all after the first few mouthsful. The dose shook him rather, but he recovered and pulled through. Next, with another horse, they tried feeding 18 lbs of hemlock plants, and it really made the animal very ill indeed, but she also recovered and finally pulled through. They then gave her a second dose, of the same proportions, but adding a little of the pure alkaloid, calculated as the minimum death dose. She again became seriously affected, and they had nearly reached the point of sending a telegram to Mr. Standley, asking him to come and see if he was satisfied that hemlock was poisonous to horses, when the horse recovered overnight. Then it seemed to him that perhaps the season might have something to do with it, and so he took home some young plants, some middle-aged ones and some old ones, and fed them to rabbits. They were made quite ill. In 1928, when the horses in West Norfolk died, two ounces of the hemlock plant killed a rabbit. Later on in the season half a pound was required to induce symptoms, but in 1929, when the same sample

of hemlock as used for the horse feeding tests, was fed to rabbits, 1½ lbs. only caused some symptoms to develop, but did not kill. This would seem to indicate a very varying toxicity of plants in different seasons, and might explain why large doses did not kill the test horses. This point was under investigation, but more of them died, and the line of attack he was now pursuing was to determine the actual amount of alkaloid at different periods of growth, and at different seasons. He thought they must take it that in the case of the farm animals who died, and the ones he examined, conine was present. The other point which arose, and to which he was going on next, was to make sure what other likely umbelliferæ, which contained any active principle, were growing in the district, and what the active principle was. He also had to find out the relationship between the exhibition of symptoms and the period at which the hemlock plant was growing in the various districts throughout the country in which outbreaks of grass sickness occurred, as some of these might be referred to poisoning. The investigation at present rested there, and he had to spend the rest of the year in the laboratory working out the question of the relative amounts of alkaloid in hemlock in relation to the season and time of growth.

The only other point that struck him in Mr. Standley's paper was that he did not talk about the difficulty of identifying plants in the field. He thought they were all agreed that the symptoms recorded in text books were rather vague: how were they going to make sure that they had not missed a possible toxic plant in the field? Looking thoroughly over grasslands or fields was a big job, and took more time than a busy professional man could always spare. As far as hemlock went, he had accumulated all sorts of collateral evidence, but there was this difficulty of identifying suspected plants in specific cases of poisoning after ingestion. He had met one very curious case. The cook of a neighbouring house said that her family were in the habit of selling branches of "saffron" to horse keepers—she spoke of it as "a tree." She was asked to bring a piece of it for examination, being struck by her description of it as "a tree." It proved to be juniper that she brought. Horse keepers were purchasing it under the impression that it would improve the horses' coats. Suppose any veterinary surgeon had been called in to a case of juniper poisoning on a farm; even if he suspected the plant he could hunt the country round for miles and not find a tree of juniper. The active principles of many plants alleged to be poisonous were not known. Take the case of arsenic. The analysist could say, within a fraction of a milligramme, what amount was present in any part of the body, but obscure plant poisons were almost impossible to identify unless recognisable portions of the plant tissue were seen. It was, indeed, the lack of accurate information that made the whole subject of veterinary toxicology so indefinite. Lastly, it seemed to him that this was pre-eminently a subject in which there should be concerted action between members of the veterinary profession, and interested members of the public. If a veterinary surgeon suspected poisonous plants to be the cause of illness and was not sure of any plant, in the neighbourhood there were quite a number of competent amateur botanists able and willing to give their time and experience to the task of identification. For busy professional men, he thought they might possibly have some exchange system by which the local botanists with plenty of time might be asked to come in and prepare a list of suspected plants from the field; they would be able to accumulate an enormous mass of information which could be used for the purposes of identification by elimination, and lead to some very definite evidence as to the toxicity of certain plants.

Replying to the President, Mr. Newman said he would be more than delighted to help members to identify doubtful plants. But most counties (including Norfolk) had extraordinarily good Natural History Societies, and no doubt many of the members would be only too glad to get records of plants and so assist in a general scheme of fixing poisonous plants by a system of elimination—a number of lists compared would gradually allow the definitely toxic species to be sorted out.

The Reply.

Replying to the discussion, Mr. Standley said that there had not been a great deal of criticism in the discussion, and therefore he did not think that here was very much that called for reply. Major Heatley had asked about lupin poisoning in sheep. That was very similar to what they termed "loco poisoning" in America, in which partial paralysis of the hindquarters was seen. He (Mr. Standley) did not refer to mutter pea, though he had seen poisoning from it, and in those cases there was a paralysis of the larynx. He was very interested in Mr. Newman's remarks made previous to the meeting. Mr. Newman had said that it was now accepted that mutter pea was not poisonous, but that poisonous effects were caused by impurities which found their way into the consignments. That was a very interesting thing to know. (Hear, hear.)

In regard to Major Heatley's remarks in reference to beet poisoning, he thought they were all aware that the typical symptoms were hindquarter paralysis and purging. But in those young animals, mentioned in the paper, that died they got no such symptoms, and he should be very interested to know what was the particular poison in the beet on the sewage farm.

He was very interested in Mr. Nesling's remarks about dog's mercury poisoning in cattle. He had never seen any ill effect from it in cattle, though he had seen it in horses. Nor had he ever seen colchicum poisoning, and, as regarded digitalis, he thought the maximum dose they could give with safety was half a drachm twice a day.

Replying to Mr. Roberts, he had never noticed vomiting and salivation in rhododendron poisoning: the cases he had seen had all been *in extremis*.

Mr. Turtill's remarks about bracken poisoning were very important. He (the speaker) purposely did not bring in about hæmorrhagic septicæmia and the bi-polar organism, but he was very glad that Mr. Turtill had raised the subject, and to hear Professor Buxton's remarks upon it. He did not think that there was the slightest doubt that under certain conditions bracken was poisonous, especially when, as in Mr. Turtill's case, the bracken was not old, but young, and therefore must contain the active principle—filicic acid.

He thought that the discussion that afternoon had proved that bracken was poisonous.

Mr. Low's statements in regard to yew showed that under certain conditions poisons were much more toxic at times than they were at others. There was no doubt that at certain times of the year some plants were much more poisonous than they were at others.

Mr. Waters had mentioned charlock. He (Mr. Standley) had never seen any poisonous effects from it, but it belonged to the same order as mustard, and he saw no reason why it should not cause similar symptoms.

Mr. Newman's remarks were very satisfactory. His own opinion was that the cases he saw in West Norfolk were not due to hemlock poisoning at all, because in several cases they could not find a trace of hemlock anywhere on the farm, and if one could give 56 lbs. of hemlock to a horse without fatal results, he thought they could take it that none of those animals died of hemlock poisoning. Moreover, the symptoms were different from conine poisoning: they were those of so-called grass sickness, without a doubt.

In the presence of a large gathering of agricultural experts attending the conference at the Midland Agricultural College and local public, Sir Thomas Middleton, Chairman of the Development Commissioners, unveiled at Dishley Grange, Leicestershire, a memorial to Robert Bakewell, a pioneer of stockbreeding. There was a pilgrimage from Manor to the remnants of the old church in which Bakewell lies buried, where a devotional service was conducted by Archdeacon Hurrell, followed by an address by Sir Thomas, who observed that the foundation on which was built the prosperity of the nineteenth century was prepared a century before by a band of notable improvers, including Robert Bakewell.

"The Law Relating to Medical, Dental and Veterinary Practice."

We take pleasure in reprinting below, for the information of our readers, extracts from two recent reviews of Dr. Bullock's new book, which has also received excellent notices from *The Lancet*, *The Solicitor's Journal*, *The Justice of the Peace*, and other papers.

From "The Dental Surgeon," 10th August, 1929 :—

"This book is quite the best work of its kind we have seen. The gradual unrolling of the tale of legislation from the earliest enactments to the present day gives us a picture that is of the greatest interest from the historical point of view, as well as affording a compendium of information on cases recorded. Dr. Bullock has written a book which excites our admiration as a monument of erudition and painstaking research. Although Statutes designed to regulate medical matters in England began with an Act of Richard II in 1388, and an Ordinance of the City of London concerning barbers, who were the surgeons of the Middle Ages, bears the date of 1308, the insistence on adequate education and qualification of medical practitioners only came about in the second half of the nineteenth century. Nevertheless, the continuity and practical unity of the law and usages governing practice throughout the intervening six centuries is shown in a way that will be a delight to students of history. The part of this book concerned with dentistry, although it is closely intertwined with medicine and surgery, is necessarily briefer, as the history of the specialty, as regulated by law, is much shorter. It will prove, however, to be of unsurpassed interest to the dental reader, giving as it does an exhaustive exposition of the law on the subject, as well as an epitome of decided cases."

From "The British Medical Journal," 10th August, 1929 :

"The Law and Medical Practice."

"Medical practitioners, dentists and veterinary surgeons alike, to say nothing of the lawyers, will be grateful to Doctor Fred Bullock for his essay entitled 'The Law relating to Medical, Dental and Veterinary Practice.' It will be found to be meticulous in its accuracy, explicit in its references, and, unlike most such books, really interesting in its arrangement and exposition. The chapters which enunciate and explain the present state of the law relating to professional discipline, unqualified practice, the recovery of fees, and negligence, in so far as these concern medical, dental and veterinary practice, are led up to by a brief but sufficient historical sketch explaining the origin and development of the law in question, and showing the struggles of the apothecaries, the surgeons, and the physicians to differentiate themselves from the unqualified practitioners, and their feuds with each other. This part of the volume is not only of much interest in itself, but is essential to the proper understanding of the present state of affairs—to an appreciation of the limitations of the Acts under which the professions are carrying on their work and of many of the difficult questions which still confront them."

ABSTRACT.

[**Some Obscure Diseases of Sheep.** Marsh, Hadleigh (1929). *Jl. Amer. Vet. Med. Ass.* Vol. 27, p. 724].

The author points out that the dividing line between the diseases which are well understood and those which are obscure, is not clear. In this paper his choice is governed by the incidence of the diseases of the Western Area of the United States of America.

Methods of handling sheep are changing, new problems are arising, and the enhanced value of sheep makes loss a very serious economic factor.

Parturient Eclampsia.

This disease is at present giving serious cause for thought in Great Britain. Prof. Gaiger has been asked by the Ministry of Agriculture to investigate it in the North of England, and the columns of the *Veterinary Record* have recently contained references to it. M'Fadyean reported the occurrence of the disease some time ago and found that the most important lesion is fatty infiltration of the liver.

Marsh considers that the method of keeping the pregnant ewes is the important factor. In his experience, the disease occurs mostly in small flocks. Most of the affected ewes are aged ; they are fed rather heavily and get little exercise, and tend to be fat. Those affected are almost invariably carrying two or three lambs.

He gives details of one outbreak in which the disease appeared immediately after a change of feeding conditions a month before the ewes were due to lamb, and in this instance there was not the cumulative effect of heavy feeding and lack of exercise. Four hundred and twenty ewes had been grazing on wheat stubble and grass, but they had remained unusually fat. In the middle of January, a month before lambing was due, the owner started feeding alfalfa hay and cases began the following day. In the ensuing fortnight ninety-four cases occurred, with twenty-five deaths.

The symptoms were similar to those described by other authors, and the animals usually recovered if parturition occurred.

The author refers to the work of Dimack, Healing and Bullard, who demonstrated that the urine is acid and contains acetone, albumen, and an increased quantity of ammonia, and also that examination of the blood reveals acidosis.

Fatty degeneration of the liver was a constant lesion. Bowel stasis was not a striking feature of the cases.

The author concludes that the disease is an auto-intoxication due to the combination of a twin pregnancy with heavy feeding and lack of exercise, and, in some cases, change of feeding late in the period of gestation. He suggests the administration of glucose and quotes one farm in which sugar beet molasses is added to the drinking water of the ewes with good results. Greig and Stinson have referred recently to the therapeutic use of calcium gluconate for this condition. It is obvious that an extensive pathological and biochemical enquiry into the disease is required both in this country and in America.

Stiff Lambs.

More than one condition is included within this title.

The name apparently includes typical "joint-ill" and also an "atypical joint-ill," such as is common in certain flocks in this country, in which the disease only appears after the lambs are two or three months old. The author found, however, that this condition in the older lambs is also an umbilical infection. He isolated a slender gram positive bacillus which he had not identified. Cornell and Glover isolated the bacillus of swine erysipelas from cases of "joint-ill" in lambs, and it will be interesting to hear the results of further work carried out with the organism Marsh describes.

The disease described by Metzger and Hagen is referred to. In this condition there are definite lesions in the muscles of the legs—white streaks—and sometimes white areas under the endocardium. The lesions in the leg muscles are always bilaterally symmetrical in their distribution.

It occurs in closely herded sheep lambed in pens, and attacks lambs three to eight weeks old when they are first turned out to grass. While the limbs are severely affected, there is no arthritis, and there does not appear to be any systemic disturbance. Recovery is rare and most of the affected lambs have to be destroyed because they are so helpless.

The etiology of the disease is unknown. It cannot be transmitted to healthy lambs. The author suggests that it may be a deficiency disease, but does not support the view with any evidence. He reports also the occurrence of a clinically identical condition in which lesions are absent.

Progressive Pneumonia.

This apparently includes pneumonias of differing origins.

A chronic infection principally attacking old ewes in the North-Western States is described. It is a disease of range sheep and is a chronic, interstitial pneumonia. It is very slowly progressive and is invariably fatal. The author has investigated the disease for a number of years and found two organisms to be quite constantly present—*Pasteurella ovis* and *B. pyogenes*, but he has not been able to prove that either of them is the causal agent. He considers that lung worm infestation may be the primary causative factor, and that dust may be an exciting agent.

It may be the same disease as the "jagziekte" of South Africa.

Bighead.

This also is a disease that occurs in this country as well as in America. It is characterised by a rapidly developing œdematous swelling of the face, ears and throat, with an intense congestion of the parts of the head not covered with wool. The swelling is so great that the eyes may be closed. Serum exudes from the skin over the affected parts. The affected sheep become restless, toss the head, and show evidence of great irritation and itching. They wander aimlessly and may leave the flock. The swelling makes feeding impossible, and interferes with respiration. Fever is present, ranging from 104° to 107° F. Many of the badly affected animals die. The less severely affected sheep recover. In the recovered cases there is extensive loss of epithelium over affected parts.

This condition usually occurs in the spring when sheep are being trailed to shearing pens or from winter to summer range. It has been noticed that it is most likely to occur following a spring snowstorm, when the sun is bright and hot, and the sheep are driven in the hot sun.

The author discusses the suggestion made in Europe that the disease is due to buckwheat poisoning, which sensitises the animals to sunlight. Moussu states that the disease may occur where sheep have never eaten plants of the genus Polygonum, and that it may occur in black-faced as well as in white-faced sheep.

The author points out that the geographical distribution of the disease in America suggests the probability that a sensitising factor is present, possibly a forage plant, which under certain conditions renders the sheep susceptible to a heliodermatitis.

Tick Paralysis.

This interesting disease has been described in parts of North America, notably British Columbia, in South Africa and in Australia. Species of Dermacentor and Ixodes are responsible for the condition. As usually described, animals and human beings are affected, and in all cases engorged female ticks are found along the spinal column or on the back of the head. The author speaks of cases which occurred in Montana in the springs of 1923 and 1925. About 10 per cent. of the sheep in affected flocks showed symptoms, and there was a loss of 1 per cent. The cases occurred late in March and early in April when the wood-ticks became active. The first cases were noticed about a week after the infestation began. The remarkable feature of this condition is the rate at which recovery frequently occurs when the engorged ticks are removed. The author refers to Bruce's suggestion that the symptoms are due to toxin secreted by the feeding ticks, and that the paralysis occurs only when the ticks are feeding more rapidly than usual.

The Spotted Fever Laboratory at Hamilton, Montana, has found *Bacterium tularense* to be present in ticks taken from tick paralysis cases in sheep, and has also found in several cases that the blood serum of the affected sheep agglutinated *B. tularense*. These facts have raised the question as to whether tick paralysis in sheep, as observed in Montana, is not tularemia. This problem is being studied by Dr. R. R. Parker, of the Spotted Fever Laboratory. It seems improbable that tick paralysis and tularemia can be identical, in view of the fact that complete recovery from tick paralysis occurs after the removal of the engorging female ticks.

Neutralisation of Tetanus Toxin with Glucose.

M. Garofeanu and P. Jonescu (*C. R. Soc. de Biologie*, May 24th, 1929, p. 227), in view of recent reports on the beneficial action of intravenous inoculations of glucose in cases of tetanus in the horse, have examined the neutralising power of glucose on tetanus toxin *in vitro*. Using the mouse as the test animal, it was found that 10 mg. or more of glucose—added in a 20 per cent. solution—were able to neutralise one minimal lethal dose of toxin. Neutralisation was sufficiently complete after one hour's sojourn at room temperature to protect the animal from death. When two minimal lethal doses of toxin were used it was found that even 50 mg. of glucose failed to neutralise it completely. Mice injected with the toxin glucose mixtures all died, though their survival time was considerably greater than that of the control animals. How the neutralising action of the glucose is exerted was not determined, but it does not appear to be due to alterations in the *p*H of the toxin.—*British Medical Journal.*

The Veterinary Record.

31st August, 1929.

SHEEP DISEASES.

Anyone well acquainted with the common diseases of sheep in this country could write, in ten minutes from memory, a list of more than fifty different important conditions which regularly cause heavy losses to sheep farmers. This is sufficient evidence of the complexity of the question of dealing with sheep diseases to indicate the farmer's need for expert guidance. It appears to be necessary to point out this need, because, although veterinary surgeons are asked to deal with sheep diseases more and more every year, there is far too great a tendency on the part of sheep farmers, either to accept even heavy losses philosophically and do nothing to prevent it, or to attempt treatment without expert guidance. Those members of the profession who spend a good deal of time on sheep farms in the course of investigating sheep diseases, see evidence of an enormous amount of preventable wastage from disease. Shepherding has included the treatment of sheep for disease from time immemorial. It is advisable for shepherds and flockmasters to have a reasonable knowledge of first-aid treatment, but it is necessary for them to rely upon expert guidance for dealing with anything but the simplest conditions.

Rational methods of prevention and of treatment are available for dealing with most of the diseases one would enumerate as being of common occurrence in this country. There are, however, still a good many obscure conditions, but the list is becoming smaller and smaller each year.

The types of sheep farming can roughly be separated into three or four main categories and the prevalent diseases vary to some extent according to the nature of the country and the types of sheep maintained. There is some apparent, but not real, obscurity concerning some of the diseases because of the use of local names which are only known to the people of a partieular neighbourhood. The same name may even be applied to entirely different conditions in different parts of the country. This indicates the need for a rational nomenclature based upon knowledge concerning the nature of the particular diseases concerned. While it is unfortunately the case that some of these conditions are obscure, many or most of them are now sufficiently well known for the application of names which really define the pathology of the condition. Such names as "strike," "orf," "the sickness," "braxy," "grass ill," "ray," etc., etc., convey no indication as to the nature of the diseases to which they are applied

There is a great tendency on the part of sheep farmers to believe that the diseases of sheep fall within very few well known categories, and in any individual locality the actual number of names used to cover all the diseases encountered is quite few. This is the natural result of the attempts of untrained observers to differentiate these conditions. Without clinical and pathological training it is quite impossible for anyone to appreciate the important differences which separate one condition from another. This outlook upon sheep diseases is really quite remarkable, because many enlightened sheep farmers, while realising the utmost importance of the most elaborate methods for the diagnosis of diseases affecting themselves and their families, expect to be able to make an accurate diagnosis of the cause of death in a sheep from the use of one or two rough and ready observations, such as whether the wool can be pulled off easily, whether the abdomen becomes distended with gas, etc., etc., without even going to the trouble of looking at the important internal organs, and quite apart from consideration of an expert bacteriological and pathological examination.

A good many of the sheep farms in the mountainous parts of the country are very remote from the headquarters of any veterinary surgeon. This, however, only applies to limited areas, and the motor car has brought many hitherto distant places within quite easy reach of trading and other centres. There is probably greater scope for sheep practice when combined with other types of practice than is realised. Some of the failure of farmers to seek expert advice is possibly due to the small interest shown in sheep by some practitioners. To the younger men this phase of practice should be worthy of consideration. Brief courses of special instruction on sheep diseases for veterinary surgeons could possibly be arranged at one or two suitable centres. The laboratories which have been dealing to any extent with these questions during the last few years have acquired a vast amount of experience, and their staffs could impart specialised knowledge which would be of the greatest possible value to those attending such courses. At the same time, it appears to be necessary to realise that the conditions in which sheep diseases arise, call for rather special methods of treatment. In most cases the animals concerned are individually of small value, and if methods of prevention or treatment are to be worth employing, they must be economical.

There has been a considerable amount of research into sheep diseases during the last few years, particularly since the war. The results obtained have fully justified the money spent on this work and continuation of the research is the only way of preventing some of the losses which we are, at present, powerless to curtail.

Parasitic diseases are of enormous importance and, of these, the injury caused by the different types of worms is responsible for most of the losses. While the nature of the worms concerned is now quite well known, life histories are still obscure in many instances, and we are still in need of therapeutic measures for removing some species of worms from the alimentary tract without injuring the host.

Deficiency diseases are now claiming a good deal of attention and there is considerable evidence that lack of essential nutritive substances is responsible for a portion of the unhealthiness of sheep in some parts of the country. While giving attention to this aspect of the subject, it is necessary to remember that the operation of specific infective agents must not be neglected.

CLINICAL AND CASE REPORTS.

Clinical Notes.*

By H. Fraser, M.R.C.V.S., Tavistock.

Arsenical Poisoning in Horses.

Some years ago I was called to attend a mare. I found her sweating and blowing, with a decided lift at the flank, very anxious in expression, and passing small quantities of solid fæces. The rectum was dilated, the mucous membranes were very injected; temperature 106° F., pulse 80-90, and the mare was looking very ill.

No diagnosis was asked for and none was given.

The mare was seen next day, when symptoms were much the same, only more marked. Pulse 120; temperature dropped slightly, membranes more injected and becoming a more yellow red. Slight colicky pains, great depression. Arsenical poisoning was now suspected and the animal died in the night. Diagnosis was confirmed on analysis.

Sixteen months ago I saw several horses affected and one was dead. All were stabled from work in the evening and none was reported ill. The night's feed was not cleared up, some having eaten more than others.

In these cases no animal had a high temperature; there was no blowing as in the first case, but great depression. Weak, wiry pulse up to 120, bowel motions suppressed, and what was passed was not much out of the normal. The membranes were very much injected, the less seriously affected animals gave an occasional scrape with the fore foot, and all showed indications of pain. One or two horses, which did not appear very ill until one took their pulse (about 60-72) and which had temperatures of 101½°, died within forty-eight hours. The illness of so many horses at one time made one suspect poisoning, and a *post-mortem* was held on the dead horse. Analysis confirmed arsenical poisoning.

A horse working in the daytime was noticed to be scouring in the afternoon. It was put in the stable, and left for the night. It did not clean up its food in the night, and I was called in the morning. The animal was sweating profusely, looking very dull, uneasy, and bloated. Pulse 80-90, temperature 101½° F.; it gave an occasional blow from nostrils (half sigh); the eyes looked glassy; the membranes were very injected, whilst that of the mouth looked somewhat yellow, and the driver stated the urine to be yellow in colour. He also said that the animal was stiff behind, but this I could not observe.

At 1 p.m. the horse looked more uneasy, and more haggard. Temperature the same; pulse 100. At 5 p.m. the symptoms were more pronounced, the animal going up and down in pain, and at this time severe straining to defæcate was noticed. The horse appeared in great pain, and I wished I could have destroyed him. He died quietly at 8 p.m. after great agony.

On making a *post-mortem* of the carcase, when the abdominal wall was opened, a most sickening, peculiar odour was emitted, an aromatic sort of smell which clung to one for hours. I had never experienced the same odour from a carcase.

These three cases are somewhat different superficially, and it is difficult to understand, when one considers the lesions, why more abdominal pain is not shown. The most diagnostic symptoms appear to be a very great depression, highly-injected membranes, slight pains, and a fast wiry pulse. I cannot recall any other affection in the horse which I have seen that presents those symptoms, coupled with the appearance of the animal, which is so difficult to put into words. In these cases how the arsenic was administered is not known.

Poisoning by Dog's Mercury, Wild Spinach, Mercurialis Perennis.

Two colts, missed from a field, were found in a wood—one dead and the other ill. The ill colt was very dull; it looked full, the bowels were sluggish, and small in amount, but the fæces were fairly normal. Temperature 106°; pulse about 80; breathing somewhat accelerated. Owing to circumstances, plant poisoning was suspected. Opening medicine was given (linseed oil), and chlorodyne in small doses, and access to plenty of water was allowed, this being drunk sparingly. The colt remained much the same for nearly a week and all the visible mucous membranes assumed a very bright yellow colour, best seen in the vagina. The urine was a golden colour; no colicky pains were shown, and slow recovery was made. Some of the suspected plants were pulled and identified as dog's mercury.

Buttercup Poisoning.

A farmer moved eleven young cattle, varying from six to twelve months' old, from good pasture on to a small field, which the owner thought was full of grass.

After the cattle had been in the field for two days they were all observed to be ill, more or less. The younger cattle were more particularly affected, being off feed, looking empty, and having offensive diarrhœa. The temperature was slightly elevated. The animals looked weak, and had a staggering gait, particularly behind.

Poisoning was suspected, and on going around the field the only culprit one could find was the buttercup, the tall coarse variety. There was practically nothing else for the cattle to feed on, and one could see where they had eaten extensively of the weed. All animals were drenched with linseed oil and chlorodyne, and as the owner's farm was only about a mile away he thought he would open the gate and allow them to walk slowly home. I told him that I doubted if they would: however, they did.

The younger cattle were put on to oatmeal and milk, with small doses of chlorodyne, and all recovered in a day or two.

Malignant Œdema in Sheep.

On a Saturday morning last month, a farmer called and said he had clipped one flock of his sheep on the Thursday. On Friday evening he observed a number of them ill, off feed, and lame, and now seven were dead and several ill. I went and saw them and made several blood smears, and examined for anthrax (negative). There were numerous little shear snips all over body, and a hard crust on the surface, where they had been dressed with lime. On cutting through or around this crust, the tissues were quite black, and gas oozed out. One or two lambs were dead or ill, and did not appear to have any wounds, and

* Cases presented to the Western Counties' Division, N.V.M.A., at Plymouth, on 18th July, 1929.

one wondered how they got infection—whether from sucking the dams, or otherwise. Several sheep were treated by numerous incisions into the swellings and applying B.I.P.P.

On Sunday morning it was reported that all the treated sheep were dead, and the owner did not think treatment of much avail. On Tuesday he reported that five of the affected animals were alive, and thought they might be worth treating. I visited and applied the same treatment, but was not hopeful of two. These died next day. Of the remaining three I have heard nothing further. In all, nineteen died, and three remaining, which were ill, out of 122 sheep.

The sheep were clipped in a barn with an old wooden floor, and it had been a custom of this farmer to throw a sheep, found dead, into this barn and leave until it was convenient to pull the wool from the carcase, and (according to workmen) he allowed the dogs to eat the flesh there.

There is no doubt that the sheep rubbed the infection into the shear wounds whilst being held on the floor to be clipped. The Moorland flock, which were to have been clipped a few days later, were taken away to another farm, and clipped by entirely different men, and no casualties occurred.

Actinomycosis affecting Body.

In practice it has often occurred to me how one seems to get a number of similar cases in a short period. In about three months I have seen three cases of the above affecting the ribs and backs of cattle.

The condition begins as a hard leathery patch ; the hair gradually falls out, and the skin becomes more or less necrotic. Another case appeared as a sloughing wound just above the elbow, with a hard area all around, and after convincing the owner of the nature of condition, treatment was adopted. As this was my first case of the condition affecting the body, I fear I did not diagnose it. I went to a farm some years ago and walked up behind the cattle in a byre, and came to a funny-looking object at the other end. I asked the hind what this animal was, and had a good look at him. "Oh, that one is going to the knacker on such and such a day" ; so no more was said. All the hair was completely gone, on one side only, from in front of the shoulder right back to tail. The skin and underlying tissue were like hard, old leather, and here and there a straw-coloured fluid exuded. After I had seen the other less extensive cases, I recognised this one as such. The first cases referred to all responded well to treatment. *Re* treatment of the disease, I find that nothing gives as good results as potassium iodide.

Inflammation in Spermatic Cord in a Ten-year-old Gelding.

I was called to attend to a vanner gelding on a small farm. The animal had been to work in the morning ; at midday it refused its feed and appeared dull. I found him scouring, temperature 105°, pulse 60 ; he looked full and walked stiffly. I suspected dietetic trouble, and gave opening medicine, leaving chlorodyne to be given if any pain was shown, but none appeared.

Next day the condition was much the same. The fæces were examined for our very common friend in this neighbourhood—red worms—but none was found. The horse when left at grass would walk about and graze and drink a little. Sodium bicarbonate was given in the drinking water. The horse remained the same for about a week, and the trouble was considered to be due to inflammation of some serous membrane, and, as he did not grunt on being turned short, the pleura was considered free. About the eighth day the horse became stiffer and more distinctly lame off hind. The sheath was œdematous, and this caused me to look in that region, when a tense swelling could be felt over right spermatic cord.

Hot fomentations were applied for two days, when an abscess was expected to form. There was, however, no sign of abscess after two days, when a blister was applied to the region. On seeing him a week later, the swelling had gone and the animal appeared well. A fortnight later I saw him pass along pulling a grass mower, but I thought he had lost flesh.

Relapses in Milk Fever.

Are relapses in milk fever due to insufficient inflations of the udder ? I do not mean half, or badly done, inflation, but that state which I have on several occasions met with when, for some unknown reason, I could not get the udder as tight as I wished, no matter how long I tried. I have blamed the pump, but do not think that is the reason. I can recall several such cases in which I thought "I shall be back here again"—but it has not proved so. I have come to the conclusion that my relapses, which luckily are few, are not due to a weakness in treatment, but to a return of the original cause—whatever that may be.

A week or two ago I was called at 7 a.m. and found a cow down in the field. I do not like cases found down before breakfast ; as a rule one does not know how long they have been bad. This was a very bad case ; the nostrils were green with food eructation. The udder was inflated, and, as the ducts were very open, the teats were tightly tied. Once or twice in the next half hour I thought the cow had stopped breathing.

I waited a good hour, reinflated, tied the teats tightly, and went away and did a couple of cases, returning two-and-a-half hours later, when the cow did not seem to have improved much, except that she lay up better. Again I reinflated, and no sooner had I finished than she got up and walked indoors. I left instructions that the tape should be removed from the teats in three hours, and the owner said he had some difficulty in getting them off as they were tied so tightly. In the evening (8 p.m.) the cow was reported better ; it would eat a little but would not drink. Next morning she was reported better : she ate very little, but did not drink. The owner wished her seen once during the day, and I saw her in the afternoon. When she got up she looked all right ; she had no temperature but would neither eat nor drink. After reinflation, however, she improved in a very short time.

Although this cow had very relaxed sphincters of the teats, I have no hesitation in saying that the relapse was not due to lack of udder pressure.

Discussion.

Mr. W. G. Blackwell spoke of the difficulty experienced in getting a definite diagnosis from analysts in cases of arsenic poisoning. He had sent samples on several

occasions for analysis, yet there had been negative results. At the same time, there was no mistaking the symptoms.

Mr. R. E. L. PENHALE said he treated a good many cases of milk fever in his district. In no case had an animal relapsed after injections of chinosol. Sometimes he had given several injections. He was also recently called to attend a bullock, and had some difficulty in diagnosing the disease, but after hearing Mr. Fraser's paper he had no doubt it was actinomycosis.

Major ASCOTT said he would have liked an expression of opinion as to where animals got the arsenic in such cases of poisoning. He had had no cases or experience in such matters, and it might possibly be a thing they could guard against. In cases of actinomycosis he relied upon large doses of potassium iodide, to which he added tincture of iodine to colour it and prevent mistakes. Milk fever was a thing about which they could all talk. There seemed to be a notion that the teats must be tied after inflation. He never practised that, and any recurring cases he attributed to milking too quickly.

Mr. H. W. TOWNSON said that, in cases of malignant œdema, he preferred more often to regard the condition as septicæmia. He used oxygen in cases of milk fever, and agreed with other speakers who said that cases of cows going down again were due to milking too soon. In his view potassium iodide and biniodide were the only things for treating actinomycosis.

Mr. C. MASSON mentioned malignant œdema in sheep and observed that the bacillus was found in the blood stream and not in the muscles. He always insisted on three weeks' treatment in cases of actinomycosis. In cases of milk fever he left the farmer to do the pumping while he massaged. He did not agree with those who did not tie the teats.

The SECRETARY (Mr. R. Barons Neider) said he never tied the teats of cows unless he had difficulty in keeping the udder distended, and did not consider it necessary. In his experience, the most frequent relapses in cases of milk fever were those that had had attacks in previous years. He would like to know if Mr. Fraser had found the stomach impacted with food on *post-mortem* in arsenic poisoning, because he had found this fairly frequently.

Mr. E. A. WILSHAW remarked that in cases of milk fever, he always found iodide of mercury very effective.

Replying to the discussion, Mr. FRASER said that in cases of so-called malignant œdema he had very little faith in vaccines. In regard to milk fever, sometimes when a farmer tried to treat it he either did not distend the udder sufficiently or used a dirty pump and finished up with udder ill.

The arsenic that caused the poisoning in some of the cases he had related was no doubt obtained from disused mines. On *post-mortem*, he had found the stomach impacted with food in all cases but one.

A further communication on Calcium Therapy In Milk Fever.

By OSCAR STINSON, M.R.C.V.S.

Since the writer's previous communication on the treatment of milk fever based on the theory of calcium deficiency enunciated by Greig and Dryerre, the following cases have been successfully treated by the administration of calcium gluconate (Sandoz).

CASE 1. Cow calved her fourth calf two days previously. Almost completely comatose, and had been so for four hours. She was given 300 ccs. of a 10 per cent. solution of calcium gluconate intravenously. The patient rose and walked across the byre in 75 minutes.

This treatment was reinforced by two further injections of 300 ccs. of a 10 per cent. solution of calcium gluconate subcutaneously. Samples of blood were forwarded to the Royal (Dick) Veterinary College for determination of calcium content. The first sample, drawn immediately before the intravenous injection, was 4.99 mgs. Ca per cent.

Three other samples of blood were taken during the following three days, and were found to contain 6.35 mgs. Ca per cent., 7.93 mgs. Ca per cent., and 8.26 mgs. Ca per cent. Several weeks later her blood serum was again sampled and contained 9.9 mgs. Ca per cent.

CASE 2. Heifer calved 36 hours previously. Staggering, and had difficulty in standing. She was given 300 ccs. of a 10 per cent. solution of calcium gluconate subcutaneously, and made a rapid recovery, being reported normal two hours later. When examined at the next visit, 7 hours and 45 minutes after the injection, she was normal in every way. The blood calcium content immediately before the injection was 5.34 mgs. per cent. The determination of the blood serum calcium taken at the second visit showed that it contained 7.12 mgs. per cent.

CASE 3. Cow calved several weeks (in œstrum the day previous). Down, grinding teeth, head retracted to the side. Got up with great difficulty, but fell immediately. One-and-a-half ounces of calcium gluconate were dissolved in a quart of hot water, filtered,and injected subcutaneously at blood heat at five points high up on the neck on either side. She was on her feet and fairly steady in half an hour, and at the second visit, three hours after the injection, she was found eating hay and was almost normal. Her blood serum at the first visit contained 5.24 mgs. Ca per cent. At the second visit 7.46 mgs. Ca per cent.

It will be observed that in each case the diagnosis of milk fever was confirmed by the low calcium figure.

The injection of calcium gluconate was followed by a rise in the calcium concentration in the blood, and the disappearance of the symptoms.

The pre-injection figures in these cases (4.99 mgs.; 5.34 mgs.: and 5.24 mgs. per cent.) represent the average concentration of calcium in milk fever, according to the findings of Dryerre and Greig, and since they found that the blood calcium in milk fever is commonly as low as 4 mgs., and may even fall to 3 mgs. per cent., it follows that in severe cases large doses may be required. It is conceivable that in severe cases the doses mentioned above may be insufficient.

In a private communication Professor Greig has suggested that at least 300 c.c. of calcium gluconate solution should be given intravenously, and the effects of this injection reinforced by subcutaneous injection; the absorption of the latter being relatively slower, but more prolonged. From the evidence submitted in this and the writer's previous paper it may be taken that milk fever can be cured by the injection of calcium alone, exclusive of mammary inflation.

Whatever the practical value of this treatment as a complete substitute for mammary inflation may prove to be, it may be confidently accepted that in the injection of calcium we have at least obtained a rational and very valuable means of supplementing the effects of mammary inflation, when such is required.

TREATMENT OF ANIMALS IN SPAIN.

By the terms of a recent Royal Order, fines varying from 5 to 50 pesetas (about 2s. 6d. to £1 10s.) are to be imposed on persons found ill-treating or overloading animals. For a second offence the fine will be from 50 to 100 pesetas. Treatment of animals which would constitute an offence against this order is clearly defined.

From The Veterinarian, March, 1829.

Two Successful Cases of Tetanus.

By Mr. W. Henderson, Edinburgh.

To the Editor of "The Veterinarian."

Sir,—Being a constant reader of "The Veterinarian," and interested in the welfare and advancement of veterinary science, I now send you two cases of tetanus, successfully treated. Should you think them worth inserting, please give them a place in your most useful work, and oblige.

Yours, etc., W. Henderson, V.S.

Edinburgh, 40 Rose Street.
13th Feb., 1829.

Case I.—Idiopathic Case of Tetanus.

On the 7th November, 1821, Mr. Scott, farmer, Lanneston, sent one of his horses to the forge. The servant who brought him stated that he thought him in a bad way as he had never had such difficulty in getting a horse along the road, it having taken him nearly three hours to bring the horse from Lanneston, a distance of about three miles.

When I saw the horse, I found him labouring under all the symptoms of tetanus; his head more elevated than usual, ears erect, and pointed forward, membrana nictitans protruding in part over the eye, nose thrown out, nostrils dilated, his tail a little elevated; he straddled in his gait, and all the symptoms combined gave the disease a complete confirmed appearance.

I understood from the servant that the horse had been standing in a cold stable, with an insufficient roof, through which the rain had fallen on him, and which appeared to me to be a likely cause of the complaint, he being in low condition, and probably labouring under some derangement of the digestive organs, which might have predisposed him to become affected.

From the contracted state of the jaws, and general rigid state of his muscular system, his medicine could not be given in a solid form. I therefore made up a draught composed of ℥vii aloes barb., and mixed it with a bottle of linseed oil, which I managed to administer with a syringe, introducing its point between the grinders and cheek, which I have found, in the course of my practice, to be the best way of giving fluids to horses labouring under this disease. I then clystered him, and gave directions to the servant to take him home, and let him be well clothed, bran-water offered to him frequently, and to be kept as quiet as possible.

9th. Medicine had operated well, muscular system less rigid. Respiration and pulse diminished; sucking in through his teeth a little boiled barley; and he moved apparently with more ease to himself. I left orders to continue the same regimen and, having seen Mr. Scott in town, about two weeks after, he informed me the horse was nearly well. I afterwards learned that he recovered perfectly, about the middle of December, and was put to his usual work.

Case II.—Symptomatic Tetanus.

1821, April 20th. Attended a horse belonging to Mr. Allan, farmer at Neubridge, near Edinburgh, which had been seized with a tetanic affection of his whole system, caused by an injury he had receiveed in the near hind foot from shoeing. The disease first appeared on the morning of the 20th, when Mr. Allan sent for a farrier in the neighbourhood, who observed that it was of no use trying anything with him, for he would certainly die. At 10 o'clock p.m. when I saw him, and found the disease confirmed in all its symptoms, I removed the shoe, pared the horn round the part injured by the nail, dressed with digestive ointment, and applied a warm bran poultice. Three drachms of opium were given on the point of a cane: he was clystered, six setons were inserted in the spine, a strong blister was rubbed through the whole length of the spine, and a sheep skin was put on his back.

21st. No better, blister had taken a good effect; gave ℥x of aloes barb. dividing the same into three portions. Ordered him out of the stable into a loose house, and to be kept as quiet as possible. Green food to be offered to him, and bran mashes.

22nd. Ball operating, and the animal somewhat better; pulse less frequent; respiration not so laborious; the muscular system less rigid. In the evening ℥iij opium given; blister anointed, and setons stimulated.

23rd, seven o'clock a.m. Opium ball ℥iij, and repeated at one and eight o'clock.

24th. Three opium balls given as before, and setons dressed, keeping the poultice at the foot moist and warm.

25th. Much better; opium balls continued to the 30th, when I attended and found him nearly well; setons stimulated; blister anointed, and poultice discontinued. Left orders to continue the opium balls a little longer.

May 2nd. Attended and removed the setons; anointed the back, and ordered him to be turned out during the day in a field adjoining the stable, keeping his clothes on, and to continue the opium balls, as the muscles seemed still to be a little affected.

Opium balls were given up to the 10th of the month, about which time he got quite well, and was put to his usual work.

Empire Research Fellowships.

Arrangements for the institution of three Fellowships at Onderstepoort laboratory have been completed between Major Elliot, the chairman of the Research Grants Committee of the Empire Marketing Board, and Dr. Dutoit, the Union Director of Veterinary Research.

The Marketing Board is providing a capital grant of £10,000 for building or library extension required in connection with the scheme, and is also providing an annual grant of £11,000, of which £3,000 will be used for the Fellowships and the balance will be used in connection with the research to be carried out. Among the subjects into which research will be made are the problems of tsetse fly control.

Veterinary Public Health Work in Essex.

At a recent meeting of the Diseases of Animals Sub-Committee of the Essex County Council it was reported that, under the Tuberculosis Order, 226 animals had been slaughtered during the quarter, against 148 the previous quarter. £1,171 6s. 6d. had been paid to owners in compensation, of which £878 9s. 10d. had been refunded. Salvage amounted to £458 9s. 10d., leaving a balance of £165 18s. 4d. The Chairman, alluding to the increase of cases, said it seemed that farmers were alive to the fact that stamping out the disease was necessary. There had been a conference with a Special Sub-Committee of the Public Health and Housing Committee with regard to the prevention of tuberculous milk. The sub-committee made three suggestions: (1) To increase the biological examinations from 250 to 500; (2) a routine inspection periodically on all dairy holdings, as carried out in the Ongar and Tendring districts; (3) the appointment of another superintendent veterinary officer to supervise the whole thing. The Chairman said the committee had agreed that another veterinary officer would not meet the case, and that a routine inspection as carried out in the Ongar and Tendring districts would not have the result which the Public Health Committee thought it would. They had agreed that biological examinations should be increased.

Distemper in Foxhounds.

At the annual puppy show of the Grafton Hunt, held at the Grafton Kennels, Pauler's Pury, it was announced that since inoculation methods had been adopted there had been a complete absence of loss of puppies by distemper.

DIVISIONAL REPORTS.

Royal Counties Division, N.V.M.A.

SUMMER MEETING AT WINDSOR.

The Briton is at times reproached with an indifference to historic treasures almost at his door, which the foreigner will cross oceans to see, but it only requires the provision of a suitable opportunity to reveal the fact that he is proud of his national possessions, and as keenly alive to their value and interest as any over-seas tourist who wends his strenuous and hasty way from one "sight" to another.

When the President of the Royal Counties Division (Captain J. R. Hewer, O.B.E., M.R.C.V.S., of Swindon) conceived the happy idea of enlisting the able and willing services of Major R. C. Tennant, of Windsor, in providing such an opportunity for the members of his Division and their ladies to view Windsor Castle, the Royal Stables and the Royal Farms, he must have known that he was ensuring the success of the Summer Meeting. Certainly no programme could have proved more to the taste of those who were privileged to participate in this outing, which took place on Friday, 26th July, 1929, the members of the party being as follows :—The President and Mrs. Hewer, Mr. and Mrs. J. R. Baxter, Mr. and Mrs. A. J. Beeson, Mr. H. Bell (Hon. Secretary), Mr. and Mrs. J. Bell, Mr. and Mrs. R. E. C. Bullen, Captain and Mrs. H. B. Collet, Mr. C. H. Ducksbury, Mr. and Mrs. A. V. Franklin, Mr. C. W. Howard, Mr. and Mrs. Jermyn, Mr. and Mrs. George King, Major Hamilton Kirk, Mr. and Mrs. T. W. Lepper, Mr. G. P. Male, Mr. and Mrs. McIntosh, Major Graham Rees-Mogg, Mr. and Mrs. H. L. Roberts, Major R. J. Sarjent, Mr. J. Smith, Lady Stockman, Major R. C. Tennant, Captain W. K. Townson, Mr. and Mrs. F. T. Trewin, Colonel and Mrs. G. K. Walker and Mr. Walker, Mr. A. E. Ward, Mr. and Mrs. F. W. Willett, Mr. J. Willett, Mr. and Mrs. R. A. Willett and Mr. E. C. Winter.

Following a brief business meeting, the proceedings at which are described later, the party made its way from the White Hart Hotel to the Henry VIII Gateway, thereby entering the precincts of the Castle Lower Ward. Passing the Guard Room on the left, the visitors viewed with interest the earliest example of architectural style in the whole structure, furnished by the western wall of the Castle, part of the work being traceable to the time of Henry III, and, in particular, the three towers on the town side of the wall. Time did not permit of the arranged-for ascent of the most northerly of these, the Curfew Tower, which ascends over the half-timbered buildings known as the Horseshoe Cloister. Instead, the party lost no time in inspecting the gem of the whole group of buildings—St. George's Chapel. At the moment, the most striking feature of the exterior (which is admittedly deficient in decoration) is the evidence given of the important work of repair which has proceeded without cessation since, in 1921, it became obvious that these labours would have to be commenced at once if the collapse of this magnificent structure was to be averted.

The interior of the Chapel is impressive in the extreme. Two beautifully-carved folding doors underneath the Organ Gallery give access to the Choir and from there the view is a most imposing one. High up to the right and left are the Stalls of the Knights of the Garter, and over each hangs the Knight's banner, surcoat, helmet and sword. The Stalls of the Sovereign and Princes of the Royal House are beneath the Organ Gallery, and all are exquisitely carved. Light from the Prince Consort Memorial Window above the Altar softly illumines the striking beauty of the whole interior. And yet Windsor has another interior to bear comparison—though this the members were not privileged to see—in that of the Albert Memorial Chapel, which is eloquent of the fact that all that wealth and talent could produce was secured by Queen Victoria when she resolved to restore and beautify that historic building as a memorial to the Prince Consort.

With inspection of the Royal Stables and Farms in view, it was soon evident that the company must press on past innumerable features of interest associated with the fact that, of the many Royal Palaces in Europe, none can trace its origin to so early a period as does Windsor Castle, or is so closely connected with its national history: for over eight hundred years Windsor has been the residence of the Kings and Queens of England.

The closure of the State Apartments on Fridays robbed the party of the possibility of even a hasty glimpse of the magnificent suite of rooms, sumptuously furnished and enriched by an historical collection of works of art of great interest and value, but it was some compensation to be able to linger for a moment in the breeze sweeping the sun-bathed Terraces, with their comprehensive views of Eton and its stately College, and the winding Thames.

The unusual privilege of visiting the East Terrace gained the party the opportunity of seeing the east elevation of the private apartments, relieved by the Prince of Wales's Tower to the North, the Victoria Tower to the South, with the Chester and Clarence Towers intervening. But it is the Round Tower which has been the central feature of the Castle since its original conception, and which is the official headquarters of the Governor of the Castle, an office which dates back to the reign of William the Conqueror. The present Tower is considerably higher than any of its several predecessors and is crowned with a flag tower, from which the Royal Standard is flown when the King is in residence.

The party next proceeded to the Royal Mews, which, erected at a cost of £70,000, cover no less than four acres. They occupy three large quadrangles and afford ample accommodation for one hundred horses (exclusive of thirteen boxes) and about forty carriages, though since the introduction of motors the inevitable reduction in the number of horses and carriages has taken place. In the stables were seen the grey horses used for Royal processions and on State occasions, and the postillion landaus used at Ascot. Several saddle horses were on view, though those used by His Majesty had gone to Sandringham.

In the harness room were seen the State harness—gold plated—for the use of the Sovereign, with outriders, saddles, etc., a black-plated set of harness for the use of H.R.H. The Prince of Wales, a double set of Russian Drosky harness, a double set of brass-mounted pony harness, presented to the present Sovereign for the use of the Royal children, and a double set of quill harness,

beautifully inlaid with goose quills, made early in the reign of Her late Majesty Queen Victoria.

In the Coach House were displayed the State Coach and State landau, a French char-a-banc, several pony carriages and two sleighs used by Her late Majesty Queen Victoria.

The members were impressed by the Riding School which, situated between the upper and central quadrangles, is 170 feet long, 52 feet wide and about 40 feet in height, with a Royal Gallery at the east end.

Return was now made to the White Hart Hotel, where most welcome refreshment awaited the party, who partook of tea as the guests of the President. Advantage was taken of the opportunity thus presented to the company to express its sincere thanks to Captain Hewer and Major Tennant for the wholly admirable arrangements which had been made for their enjoyment and for the great individual share which each had taken in ensuring the success of the occasion.

The deep interest which our Sovereigns and their families have always taken in agriculture is nowhere better exemplified than at the Windsor Royal Farms, and the company next set out to visit these—the Shaw Farm, a short distance from the Castle (in the direction of Old Windsor) of some 720 acres, and the Flemish Farm, which covers some 400 acres of the outlying neighbourhood.

The Royal Dairy, at the first Farm, was enthusiastically inspected by the ladies of the party, while all were greatly interested in the process of reconstruction to which the principal cow-byres were being subjected.

Proceeding to the Flemish Farm—still with Mr. Connacher, the King's Steward, as guide—some very fine specimens of Shorthorn, Hereford and Devon cattle were seen—Royal and Smithfield winners which elicited great admiration. This farm is so called because it was built on the Flemish plan by the late Prince Consort, but its real impressiveness lies in the magnificent class of animal bred, reared and housed there, to which the prize-certificate-plastered walls bear eloquent testimony. The drive back to Windsor through the deer-dotted Great Park provided a fitting termination to a wholly-delightful event.

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At the business meeting which preceded the sight-seeing section of the programme, the HON. SECRETARY announced the receipt of apologies for absence from the following :—Mr. J. H. L. Addis, Captain W. A. Austin, Captain A. Barr, Major W. K. Barron, Messrs. J. B. Baxter, W. J. Carless, T. G. Chamberlain, J. C. Coleman, Lieut.-Col. A. F. Deacon, Major A. C. Duncan, Major G. W. Dunkin, Mr. C. Elphicke, Mr. R. E. Glover, Major R. C. Hancock, Principal F. T. G. Hobday, Captain T. M. C. Hunt, Lieut.-Col. P. J. Simpson, Mr. J. R. M. Innes, Major H. C. Jagger, Dr. P. P. Laidlaw, Captain W. L. Little, Major-General Sir John Moore, Mr. J. McKerlie, Major E. E. Seldon, Mr. S. H. Slocock, Mr. W. R. Smith, Major F. J. Taylor, Mr. W. Western, Captain D. Wyllie, Mr. E. Wilkinson and Professor G. H. Wooldridge.

The *minutes* of the previous meeting of the Division, having been published in the *Record*, were taken as read and were confirmed.

(*a*) *Nominations for, and* (*b*) *Elections to Membership.*—(a) Mr. C. H. Ducksbury, of Calne, was nominated for membership of the Division, on the proposition of the President, seconded by Mr. Male, as was Mr. A. C. Dixon, of Berkhamstead, on the proposition of Captain Collett, seconded by the Hon. Secretary.

(*b*) The following gentlemen were elected as members :—Mr. A. J. Beeson, Ministry of Agriculture (proposer, Captain Collet ; seconder, Mr. G. P. Male) ; Major R. J. Sarjent, Guildford (proposer, Colonel Simpson ; seconder, Major Taylor) ; Captain E. C. Winter, Guildford (proposer, Major Tennant ; seconder, Colonel Simpson).

Correspondence.—(1) From Mr. C. P. Inglis and Major Wall, returning thanks for their election to membership.

(2) From the Secretary of the N.V.M.A., enclosing a copy of a report of a Conference on Sheep Scab between representatives of the Royal Agricultural Society and the National Sheep Breeders' Association, and the Minister of Agriculture. In the letter the request was made that the Division should co-operate with the bodies concerned in their efforts to educate public opinion to the seriousness of the present position in regard to sheep scab, and it was added :—" It is understood that the Council of the Royal Agricultural Society would welcome suggestions from Divisions regarding the control and eventual eradication of this disease, and any suggestions that may be sent to this office will be gladly forwarded to the proper quarter."

Mr. MCINTOSH expressed the opinion that the Division should agree to assist in every possible way, and proposed that a letter should be sent to the Council of the Royal Agricultural Society informing that body of the Division's willingness to co-operate, and that the matter would be discussed, and any consequent suggestions forwarded, at the earliest possible opportunity.

Mr. MALE seconded the proposition, which was carried unanimously.

(3) From Lieut.-Col. J. W. Brittlebank and Dr. Fred Bullock, requesting the interest and support of the members, both individually and as a Division of the " National," on behalf of the Veterinary Thanksgiving Fund.

The PRESIDENT said that doubtless all the members had seen the appeal, and he should like to hear the views of the members as to whether they should subscribe as individuals, or as a Society, or both.

Major TENNANT moved that the Royal Counties Division give a donation of £5 to the Fund.

Major KIRK, in seconding the motion, said that, at the same time, he would like to stress the point that the object of the Fund was a very worthy one. He thought it possible that some of the members might be under a misapprehension as to the destiny of the money subscribed, but he wished to say that he understood that it was going to the Victoria Veterinary Benevolent Fund—a fact which rendered it all the more imperative that every member who possibly could do so should send an individual subscription also.

Next Meeting.—It was agreed that the Autumn Meeting of the Division be held, in accordance with custom, at Red Lion Square, London.

ANY OTHER BUSINESS.

THE ROYAL SANITARY INSTITUTE CONGRESS. Under the heading on the Agenda, " Any Other Business," the

PRESIDENT said: I wish to report shortly—as we have not much time at our disposal, owing to the interesting social programme Major Tennant has arranged for us this afternoon—that I duly attended the Sanitary Congress at Sheffield as your delegate.

The Veterinary Hygiene Section held meetings on Thursday and Friday mornings, which were presided over by Professor Wooldridge, who, on Thursday, opened the proceedings with his presidential address, which was very instructive and interesting. He drew attention especially to the nomenclature of the various grades of milk and suggested that these should be revised, as they were so misleading to the general public.

Mr. Dolan, of Dublin, followed with a paper on meat inspection, and illustrated it with lantern slides.

He covered a lot of new ground as regards records, etc., and his paper proved really interesting, and was well received. It created a really good discussion, which was opened by Mr. Torrance, of Birkenhead, and carried on by numerous others.

In the afternoon we proceeded to the new Abattoir of the Sheffield Corporation, which has been recently opened.

This is a fine building and every care seems to have been given to its construction. It is self-contained, there being lairs for animals before slaughter, leading to the slaughter-house, where the animals are driven into an iron crate arrangement where they are humanely slaughtered.

Cold storage is on the same level and carcasses are run into it on an overhead trolley. The offal, etc., is deposited into shoots to be dealt with on an underground floor.

An isolation slaughterhouse is provided for the slaughter of animals under the Tuberculosis Order, or of suspicious animals seen in the lairs by the inspectors.

Meat inspection is carried on by a staff of four veterinary officers, assisted by lay inspectors. A room is provided for carcases retained for further inspection, also a veterinary officers' office and a laboratory, which is well equipped.

I understood that the butchers were, at first, in opposition to this abattoir, but would not now go back to the old system.

On Friday, Alderman Phené Neal gave an address on the history and activities of the historic Fishmongers' Company, which was very interesting, pointing out the usefulness of this old City Guild and its control over fish.

Mr. Hattersley, Chief Inspector of the Fishmongers' Company, followed with a paper on the inspection of marketable fish and how to distinguish the various species This was quite a new subject for this section and proved very interesting.

Mr. Jackson Young opened the discussion, which was well sustained.

The meetings of the Veterinary Section were well attended, and, I understood, were well above the average.

At the close of this meeting the veterinary delegates were entertained by the members of the North Midland Division, N.V.M.A. and their wives, to luncheon, which was much enjoyed and quite informal, followed by a most interesting char-a-banc trip past Chatsworth House and Haddon Hall to Buxton Spa, where we were shown over the Baths and Spa, and again entertained to tea in the Winter Gardens

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close by, which have been recently acquired by the Corporation.

After tea we were conducted back to Sheffield through picturesque scenery, after a trip of about sixty miles, where we bade farewell to our hospitable hosts.

This was a kind thought of the local Society and proved a most pleasant ending to an enjoyable Congress.

The President, who was warmly thanked for his interesting report, now called upon Major TENNANT, who had arranged the social side of the meeting, to outline the arrangements which he had made for their enjoyment.

Thereafter, the members, reinforced by their ladies, entered upon the programme which yielded them so much interest and pleasure.

H. BELL, *Hon. Secretary.*

Eastern Counties Division, N.V.M.A.

SUMMER MEETING AT NORWICH.

ADDRESS BY MAJOR HEATLEY.

Consideration of the important subject of plant poisoning in animals, introduced by Mr. H. P. Standley, senr., of Norwich, drew an excellent attendance to that town on the occasion of the Summer Meeting of the Eastern Counties Division, N.V.M.A., on Thursday, August 1st, 1929.

The President (Major T. G. Heatley) occupied the Chair and there were also present:—Captains D. Blyth, T. J. Bosworth and V. Boyle, Messrs. M. Bray, J. M. Buchanan, Herbert Buckingham and John Buckingham, Professor J. B. Buxton, Mr. H. F. Downe, Captain S. E. Hill, Mr. W. F. Howes, Messrs. T. Love, H. V. Low, C. C. Nesling, H. L. Roberts, J. F. Smith, H. P. Standley, senr., H. P. Standley, junr., Captain P. R. Turner, Mr. W. Turtill, Captain W. Waters, Mr. P. Welch and Mr. H. E. Wilkinson.

Visitors.—Messrs. J. L. Buckingham, A. H. Dawson, L. F. Newman, M.A., G. A. Tomlin and F. T. Tunney.

The *minutes* of the previous meeting of the Division, having been published in the *Record*, were taken as read and were confirmed and signed.

Correspondence.—(1) Letters of apology for absence from Captain H. R. Allen, Major E. Castle, Mr. R. E. Glover, Principal F. T. G. Hobday, Mr. G. H. Livesey, Mr. H. C. Reeks, Captain E. B. Reynolds, Captain W. Shipley and Captain W. H. Wortley.

(2) From the Secretary of the N.V.M.A., enclosing a copy of a report of a Conference between the Royal Agricultural Society and the National Sheep Breeders' Association, and the Ministry of Agriculture on the subject of sheep scab, in which the seriousness of the present position in relation to the disease was emphasised and in which the Council of the Royal Agricultural Society invited suggestions as to the more effective control of sheep scab, with a view to securing its eradication from the flocks of this country. The letter from the "National" pointed out that any suggestions on this subject received by it from Divisions, which were earnestly recommended to consider the matter and report, would be forwarded to the Council of the Royal Agricultural Society.

The PRESIDENT said that it was evident that the Ministry and the Council of the Royal Agricultural Society had sent the report out in the hope of securing some suggestions of which they might make use. He thought that probably, having then had time to consider the matter, at the next meeting members would be ready with some suggestions which could be forwarded as the views of the Society on the matter, while it must not be forgotten that, in the meantime, any suggestions on the subject from individual members would doubtless be welcomed by those who had invited such.

Resignation.—It was agreed to accept, with regret, the resignation of Captain W. J. Leyshon, who has left the Cambridge Institute of Animal Pathology for London.

PRESIDENTIAL ADDRESS.

Major T. G. HEATLEY now presented his address from the Chair, as follows :—

Gentlemen,

I thank you for the compliment of electing me President for the current year. It is now some time since I held a similar position under the guidance of my very good friend, the late Mr. Wm. Shipley. There must be few present who remember his father, but his memory serves as a lesson to me as to how an old practitioner should treat a younger member. He was kindness itself, and his sympathetic advice was most encouraging and helpful.

Having now been engaged in country practice for forty years, *i.e.*, including my term of pupilage, I may be allowed to express a few opinions, without intending in any way to be dogmatic. By nature, I am not adapted to veterinary politics, but I do appreciate those who give of their valuable time to the welfare of the profession and I take this opportunity of thanking them. I firmly believe that the country veterinary surgeon is a very important cog in the wheel of agriculture with all its varying branches ; consequently, it is important that students should see practice, as they have not the same chance as those in the sister profession, of walking the hospitals, and many cases crop up in a practice that cannot be seen in the Colleges. With the man who intends taking up small animal work the case is different, because the student of to-day has advantages that I never had of becoming proficient in that particular branch of work.

The tendency now seems to be especially to instruct men in public health work, which is highly important. They will not get the hard manual work of the country practitioner, but they will have many of its pleasures. The character of country practice has altered much during the last forty years, and much more importance is attached to bovines, due to this country being the home of pedigree stock, and the importance of milk production from the economic side of agriculture. Many able men have dealt with the production of clean milk for the public and a great deal has been done in providing sanitary milking sheds, but I sometimes think that the prominence that is given to this is apt to overshadow an equally important question, and that is the provision of proper maternity boxes in sufficient numbers, because, without these, the combating of abortion (contagious or otherwise), retained placenta and temporary sterility is not easy. It has been stated that if better care could be taken of the human mother at and after child-birth, most of the hospitals for the diseases of woman could be closed. I might say here that in a considerable number of herds over which I have veterinary control no animal is bred from until she is passed as fit, that is after manual examination. The advantage of this is very great, and appreciated by the owners and herdsmen, and I feel sure that in the future this will become the routine practice in many herds, so that it behoves every one to be in a position to handle a non-pregnant uterus, to correct abnormalities, so as to ensure, as far as possible, that the generative organs are in a healthy condition before the animal is bred from. We should then hear less of sterility. I might say here that I have used the live vaccine as issued by the Ministry of Agriculture and Fisheries without having any reason to suppose that the use has been a cause of sterility. Where this is suspected, some other reason must be sought for. It is quite obvious that many of the conditions met with cannot be studied practically at the College ; hence the importance of pupilage.

I am afraid that tuberculosis will never be eliminated from our herds as long as there is no Government control of the reacting animal.

I might say here that I am quite satisfied with the subcutaneous method of tuberculin testing, as I have no reason to suspect that "doping" is practised in my district.

Foot-and-mouth disease is being kept in check, but "swine fever" will always be with us under the present system, as there is nothing in the regulations to control the "carrier" pig.

Swine erysipalis is different, because I am forced to the conclusion that the organism is normally present in the pig, and it only requires some lowering influence for the germ to get the upper hand.

Very valuable work has been done at the colleges and various institutions in the country in the way of research into such diseases as liver fluke and the destruction of the snail intermediary host, lamb dysentery, sore mouths in sheep and "joint ill" in sheep. There is much still to be done. For example, parasitic gastritis in sheep is a cause of much loss and I imagine that "yellow livers" and "pulpy kidney" may arise from this, in some cases.

The treatment of foals suffering from red worm is very difficult and unsatisfactory, but I can see that satisfactory research into this matter would require a considerable amount of money.

Praiseworthy efforts are being made to raise money for the re-building of the London School, but it does not seem right that "bazaar" methods have to be employed to raise money, considering the national importance of veterinary science to the country.

Poultry in recent years has come into its own. Formerly it was of very secondary importance to the farms, but many men to-day realise that poultry, with reasonable attention, will show up on the balance sheet as well as any other branch of farming. It is a great help to a practitioner, in discussing the various problems with poultry keepers, if he has bred and kept poultry himself. Dealing with tuberculosis in cattle and pigs, sight must not be lost of the possibility of the poultry being affected.

A question asked in Parliament last week, as to the relationship between undulant Malta fever and contagious

abortion of cows, is very important, because the public now will be asking awkward questions and it will make the practitioner and the laboratory worker think, and think very hard.

Major Dunkin and his colleagues must be congratulated on the successful outcome of their patient research into distemper. I might say that I have used the vaccine as sent out by the distributors with no untoward results. A very interesting query was put to me. I had vaccinated five Labrador pups, and after the injection of the virus two of the puppies had a rise of temperature, with running from the eyes; in fact, typical mild distemper. The keeper asked what risk there was of the disease being caught by his ferrets from these cases. I wrote to the distributors for enlightenment. The reply was somewhat evasive, being that, as live virus was being used, there was the risk of some being spilt. Well, if that was the only danger, it was not likely that a veterinary surgeon would be so careless as to allow any of the virus to escape, unless he had a bit of bad luck. In another case, where I vaccinated a Labrador pup, the owner said his wife was wondering if there was any danger of the disease being conveyed to her pet dogs. Another man, at a distance, was not sure if he could take the temperatures and asked would I not take the dog to my place? But he did not wish to run any risk of infection. I pointed out to him that the dog had better be done at his own place, as in the light of the routine work at Mill Hill, a veterinary surgeon's kennels could not well be above suspicion. In the case of five Labradors vaccinated this week, the head keeper removed his ferrets in their hutches to his under keeper's premises.

On the question of the advisability of appointing whole-time County Veterinary Inspectors, I cannot make any observations, as I have never held the position of a District Inspector.

I should like to thank the various institutions for help they have given me in solving problems, because the stockowner accepts what they say, and it is a pleasant feeling to have one's responsibilities shared. I am sure much more might be done by these various institutions if it were not for the lack of funds, because field research must necessarily be costly. On reading the American veterinary journals one is forced to the conclusion that a great deal of money must be allocated to veterinary research by the State.

Sheep scab in the county of Suffolk is practically non-existent as compared with some other counties. Double dipping would never be objected to if people only understood the life-history of the parasite, and, if they did, many would not be satisfied with two dippings.

A small sum of money has been voted by the Royal Agricultural Society for research into mastitis. This is a very worrying and difficult disease to treat satisfactorily in practice, owing to the anatomy of the organ involved and the stage at which the disease has arrived when we usually see it.

I mentioned the late Mr. Wm. Shipley's name at the commencement of my remarks and his name must always be associated with the Victoria Veterinary Benevolent Fund. No man realised more the good the Fund could do and at one time, when he was either Chairman or Secretary of the Fund, he spent many of his winter evenings writing personal and appealing letters to every member on the Register. I think we ought to keep that in mind and help, as far as we are able, in every way, and just to try and imagine what it must be to have to make the most of every copper to provide the bare necessities of life.

The most satisfactory instrument that has been introduced in recent years, in my opinion, is the Housmann Dunn Castrator. I mention this for the information of those who have not used it.

The President's address was received with much applause.

Next meeting.—It was agreed to hold the October meeting of the Division at Ipswich, and the offer of Captain T. J. Bosworth to present a paper on sheep diseases for consideration on that occasion was gratefully accepted.

"*Plant Poisoning in Animals.*"—The President now called upon Mr. H. P. STANDLEY, senr., to give his paper on this subject. The paper was followed with the keenest interest and promoted an excellent discussion, while the interval afforded by the taking of tea (as the guests of the PRESIDENT) was utilised for the inspection of the excellent exhibition of poisonous plants, staged by the essayist and other members, a feature being the display of mounted specimens provided by Mr. Herbert Buckingham.

[Mr. Standley's paper, a full report of the discussion upon it, and details of the exhibition of poisonous plants, will be found at the commencement of this issue of the *Record*.—Ed.]

The Shipley Bowls Cup.—The PRESIDENT drew the attention of the members to this choice silver tankard, which he had with him, and which, he said, was given to the Society by the late Mr. William Shipley. The history of the cup was as follows (proceeded the President): When Mr. Shipley was alive the Summer Meeting was usually held at Yarmouth, and the Society made a big day of it. They held their business meeting in the morning, had lunch there, and in the afternoon played for the cup on Mr. Shipley's bowling green. Mr. Shipley was a very enthusiastic supporter of the Victoria Veterinary Benevolent Fund and the idea was that everyone who participated should put half-a-crown into the cup—the proceeds going to the Fund—and should play for the privilege of holding the cup for one year.

It was a beautiful tankard, but the difficulty now was to get people to play for it, and the cup should be earning far more money for the Fund than it actually was. He wanted to see the cup earning money, and he therefore suggested that he should write to every member who was not present, suggesting that they should have a draw for the cup this year and every year when it was not played for, the winner to hold the cup for a year and his name to be engraved on it. In twenty years' time, said the President, amid laughter, people would think that the man who won the draw, and thus had his name on the cup, was a champion bowls player. Of course, whenever an opportunity of playing for the cup presented itself in any year, it would be played for, but it did seem to him a great pity that, when no such opportunity arose, the cup should fail in the primary object for which Mr. William Shipley presented it. (Hear, hear.)

The President's proposition was seconded by Professor BUXTON, and carried unanimously. The cup was then

(*Continued at foot of first column next page.*)

Western Counties Division, N.V.M.A.*

PRESIDENT'S ADDRESS AT PLYMOUTH MEETING.

That the future of the veterinary profession was not as black as some might be inclined to think, was the opinion expressed by Major W. Fyrth, president of the Western Counties Division, N.V.M.A., at a meeting held at the Duke of Cornwall Hotel, Plymouth, on Thursday, July 18th.

In addition to the President, others attending were Messrs. W. G. Blackwell (Exmouth), R. E. L. Penhale (Torrington), W. Ascott (Bideford), H. Fraser (Tavistock), W. N. Wright (Torquay), W. J. Radford (Plymouth), C. Masson (Torquay), H. W. Townson (St. Austell), E. J. L. Norman (Chudleigh), E. A. Wilshaw (Modbury), and R. Barons Nelder (Hon. Secretary), of Exeter.

The minutes of the previous meeting, as published in the *Veterinary Record*, were taken as read, and they were signed by the President as correct.

Obituary. The President proposed a vote of condolence with the widow and family of the late Mr. E. W. Bovett, of Bridgwater. In doing so, he said that the Secretary had already sent a letter of sympathy to Mrs. Bovett. The motion was carried, the members standing in silence.

Correspondence. (1) Apologies for absence were read from Messrs. C. Crowhurst, F. T. Harvey, F. T. G. Hobday, J. K. Irvine, S. J. Motton, W. B. Nelder, E. J. Thorburn, A. R. Smythe, J. Forbes, E. R. Edwards, H. B. Kauntze, R. H. Smythe, and W. L. Richardson.

(2) A letter from Mr. R. Ferris, resigning his membership owing to having retired from practice. Mr. R. E. L. Penhale proposed that the resignation be accepted with regret. The Hon. Secretary reported that Mr. Ferris's successor had joined the Division.

(3) The Secretary reported receipt of a communication from the N.V.M.A., enclosing a copy of a report of an interview between the Royal Agricultural Society and the National Sheep Breeders' Association, and the Minister of Agriculture concerning sheep scab. While expressing the opinion that they could not do much in the matter, the President said he thought a lot of trouble was due to the dip not being kept up to the proper strength. Often water was added without fresh dip being added. If properly done, one dip was quite sufficient. The report was accepted, but no action was taken.

(4) In response to a letter regarding the Veterinary Thanksgiving Fund, it was decided, on the motion of Mr. ASCOTT seconded by Mr. H. FRASER, to send a subscription of two guineas.

Place of Next Meeting. On the proposition of Mr. R. E. L. PENHALE, seconded by the PRESIDENT, it was decided to hold the next meeting at Taunton.

Election of Members. Four new members were elected, on the motion of Major ASCOTT, seconded by Mr. E. J. L. NORMAN. The new members are Messrs. P. W. Bloye (Plymouth), E. B. D. Hall (Wiveliscombe), H. G. McShane (Honiton), and E. A. Wilshaw (Modbury).

PRESIDENT'S ADDRESS.

The subject of Major Fyrth's presidential address was "The Veterinary Profession and its Future Outlook." Taking the pessimistic side first, the President referred to the enormous strides that mechanisation was making in transport, and also in a number of pursuits where horses were formerly used. It made it rather hard on veterinary surgeons, particularly those who had town practices. Of course, it did not affect them so much in the country, where agricultural horses were still being bred and used. It would, however, be rather a gloomy outlook for the veterinary profession if their main prop was purely horse work. There were fortunately plenty of cattle, and they were being improved in breed. More were being bred for show purposes and for export. Sheep and pigs were also being improved, and livestock generally was being increased in numbers and quality. In that respect the outlook was not so bad.

Then again, there were now the Tuberculosis Order and the other Orders of the Ministry of Agriculture, which meant more work for veterinary surgeons in the way of inspections and testings for tuberculosis. There was also a field for the profession in the investigation of diseases of which at the present time they had not got to the bottom. For example, there was Johne's disease, in regard to which they were still rather in the twilight, and also its diagnosis in its early stages.

Still another thing they were discussing was in reference to dogs and the prevention of distemper. It had recently been taken up by a tremendous number of veterinary surgeons, and was rather a good line to follow. Again, there was serum therapy. So far as he personally was concerned, he did a number of inoculations and vaccinations as preventives for different diseases, such as black-quarter and against abortion. He was a believer in inoculation against abortion, and had also carried out a certain amount of vaccination against anthrax.

Then there was another field for the veterinary profession, and that was with reference to public health. For a young man taking up the profession now he did not think the outlook was too black if he made up his mind to get on with it, but he would advise any youngster, besides taking the membership diploma to take an additional diploma of veterinary study—State medicine or veterinary science—because that would help him if he was taking up an

(*Continued from pevious page*).

passed round, and on its return to the President's table it was heavily loaded with half-crowns.

Before the members dispersed, the PRESIDENT said that he was sure it would be the wish of everyone present that a very hearty vote of thanks should be accorded to Mr. Standley for his paper and for the extremely interesting afternoon which they had thus enjoyed through his instrumentality.

The vote of thanks was passed with enthusiasm, and the President was made the recipient of a similar tribute for his conduct of the meeting and for his hospitality.

In acknowledgment, Major HEATLEY said that he had shared to the full their enjoyment of the meeting, particularly because of the excellent number of members who had attended, which he took as a great personal compliment to himself.

W. A. WOOD, *Hon. Secretary.*

* Received on 1st August, 1929.

appointment either at home or in the Colonies. Apart from that, when the younger men followed the older they would be better able to tackle many things the older men did not perhaps quite know how to handle. Even in a country practice the extra diploma would be useful. Whilst mentioning public appointments, the President said he had fourteen slaughterhouses in his district to inspect. He would like to see all local authorities appoint veterinary surgeons as meat inspectors and inspectors of dairies and cowsheds. The time should come soon when it should be essential, and be made compulsory, that instead of laymen who had taken a sanitary inspector's course being appointed, veterinary surgeons should occupy those positions, for who understood disease better than a veterinary surgeon ?

In the circumstances, Major Fyrth did not think the profession had retrogressed, but rather that it had progressed. Since he qualified, the profession had made some marvellous strides, not only in medicine, but in surgery. At one time many of them thought dog practice was not much good. Now it was a thing they should all take up and go into as thoroughly as possible. There was another thing. It might seem small, but it was a useful sideline—and that was the diseases of poultry and their treatment. He was consulted times without number about poultry diseases.

The President said he knew there were not so many young men going in for the profession now. That was all the more reason why those going through should get as highly-qualified as possible, in order to be able to tackle anything appertaining to livestock, whether feathered or furred. Taking the profession generally, the outlook for the veterinary surgeon was not so bad, because the Colonies were getting more and more populated, and the greater the population the more the stock.

Although the Army was being mechanised, and there was not the need for so many veterinary officers, there would always be an opening in that direction for young men with a good degree. Then there were always civil appointments in India. He did not think they need fear that the profession was going to die out, therefore, he advised all the younger members to go very deeply into the study of pathology and of diseases transmissible from animals to man. He thought, therefore, that the outlook for the profession was not too gloomy.

An interesting paper entitled "Clinical Notes" was read by Mr. H. FRASER, Tavistock, and promoted a good discussion.

[This paper is published, together with the ensuing discussion, elsewhere in this issue.—Ed.].

The PRESIDENT expressed his thanks to Mr. Fraser for his very interesting paper, and a formal vote of thanks was proposed by Mr. BLACKWELL, and seconded by Mr. TOWNSON.

The meeting closed with a vote of thanks to the President for his conduct in the Chair.

R. BARONS NELDER, *Hon. Secretary.*

Twenty bullocks were reported recently to have died from anthrax at a farm at St. Cyrus, Montrose. It is the most serious outbreak recorded in that area, and is believed to be the most serious in Scotland.

Obituary.

THE LATE BRIGADIER MALISE GRAHAM, D.S.O.

AN APPRECIATION.

The tragic death of Brigadier Malise Graham, D.S.O., which was the result of an accident incurred when jumping a horse at the recent Dublin Horse Show, is mourned by all lovers of horses, and to us who have joined a profession mainly because we love animals, the sad loss of this very gallant gentleman is lamented. To those of us in the Royal Army Veterinary Corps who were privileged to know him, to admire his consummate horsemanship, and to be recipients of his unfailing courtesy and charm, the loss is a very heavy one. He possessed a most winning and infectious smile and his kindness to everyone was a joy to behold.

The writer was privileged to know him intimately when Brigadier Malise Graham was Chief Instructor, Cavalry Wing, at the Equitation School, Weedon, and his tuition in equitation was greatly appreciated, for all realised that a master hand was teaching and that he epitomised the ideal of English horsemanship. He showed infinite patience towards student and horse and every horse he rode went kindly for him, for the horse realised instantly that sympathetic and intelligent hands were holding the reins and a strong, firm seat maintaining close and intimate contact. Horse and man were as one and nothing perturbed the horseman. When finishing a gruelling point-to-point race he always appeared at the last fence, cool and confident, his face suffused with smiles. Thousands have been thrilled at Olympia and elsewhere by his skill, courage and determination.

In 1924, Brigadier Malise Graham left Weedon for Aldershot to Command the 10th Hussars, and he left behind his favourite show jumper "Broncho," which he had brought with him from the Cavalry School, Netheravon. "Broncho" was then a war veteran 20 years old, and he was placed amongst the trained horses of an officers' ride. His performances in the riding school appeared to weaken ; he commenced to refuse his fences and apparently to lose vigour. The opinion was expressed that the old horse had passed his day and it was decided ultimately to have him cast and destroyed. The necessary papers were made out for his destruction. Brigadier Malise Graham heard about this and immediately telephoned to Weedon asking for a reprieve as he was making an application to the War Office to have him transferred to him. This was eventually granted and "Broncho" sent to Aldershot. His subsequent history is now famous. The master hand brought back confidence, careful nursing restored his vigour and the result was that five years after, when 25 years of age, "Broncho," ridden by Brigadier Malise Graham at Olympia at the Interntional Horse Show, brought back the King George V. Gold Cup to England, after performing a faultless round, beating horses decades his junior. Malise Graham idolised his horses and anyone who was fond of horses was his friend. The writer remembers his grief when, after a long lameness, an old favourite hunter, "Red Seal," which had won him several point-to-point races, had to be destroyed. The deliberations before this course was adopted were long. After death a *post-mortem* revealed a keratoma which had created an elliptical indentation on the front of the near pedal bone. The hoofs were prepared for mounting and the pedal bone is preserved in the museum of the Equitation School.

His horses were as precious as children to him and when one visited him at his home he loved to show one round his stud. Any little piece of professional advice one was only too pleased to offer was accepted with graciousness, appreciated beyond measure and religiously carried out. All who had served under him admired him—particularly his old non-commissioned officers, with whom he often corresponded, never forgetting them, particularly at Christmas time. In this inconspicuous manner he performed many kindnesses. He was a picked man in the Army, with a wonderful future assured, and the Army, in conjunction with a host of friends and admirers, mourns

the loss of a very gallant gentleman, "*sans peur et sans reproche.*"

August 20th, 1929. G. L.

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SUDDEN DEATH OF MR. J. P. BURR, M.R.C.V.S.

"It was a great shock to residents in St. Neots and a wide district round to hear on Saturday morning of the sudden death of Mr. John Perry Burr, M.R.C.V.S., of Church House, St. Neots, at the age of 59," says the *St. Neots Advertiser* of August 16th. "Mr. Burr had not been in good health for some time, but his condition was not regarded as serious.

"Mr. Burr started practice as a veterinary surgeon in St. Neots about thirty years ago, and built up a very good practice. He had an excellent knowledge of the diseases of cattle, and his services were highly valued by many clients. He had been for a number of years, and was at the time of his death, a member of the St. Neots Urban District Council. He took a keen interest in its work, and was a very useful member. As Chairman of the Housing Committee which erected the first lot of Council houses he held a very responsible post, and carried out the work very satisfactorily. He held positions as Meat Inspector for parts of the St. Neots and Eaton Socon Rural Districts.

"Mr. Burr was a very conscientious, kind-hearted man; a good citizen and a loyal friend, and deep sympathy is felt with Mrs. Burr and her little son in their bereavement.

"Mr. Burr had been for some years a member of the St. Neots Church Council, where his opinion and advice were greatly valued."

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At the last monthly meeting of the Belfast Rural Council a vote of condolence was passed with the relatives of the late Mr. S. R. Thompson, veterinary officer to the Council. The Chairman (Mr. W. A. Bell, J.P.), referred to the loss the Council had sustained by Mr. Thompson's death, and Dr. Mulligan endorsed his remarks.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Aug. 31st to Sept. 6th.—N.V.M.A. Congress at Ayr.

PERSONAL.

Wills.—CARTER, Mr. Frank Leonard, M.R.C.V.S. (65), of Crespigny Road, London, N.W.4 (net personalty, £22,210), £24,122.

Mr. JAMES DUNLOP, M.R.C.V.S., of Downpatrick, Co. Down, who died on March 9th, left personal estate in Great Britain and Northern Ireland valued at £14,780. He left:—£150 to Infirmary Street Presbyterian Church for an organ and £50 to his servant, Lizzie Fitzsimons.

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Tribute to Mr. W. A. Pool.—The Scottish Farmer, in a recent issue, pays the following tribute to Mr. W. A. Pool, who is about to leave Moredun:—

"Research workers in Scotland and stock owners who recognise sound work will be sorry to hear that Scotland is to lose Mr. W. A. Pool, M.R.C.V.S., the Director of the A.D.R.A. Institute at Moredun. The movement in favour of international team work in research involves the appointment of a sort of Clearing House director, and Mr. Pool has been chosen to fill that post. These frequent changes in the personnel of the Scottish workers do not make for continuity, and the difficulties connected with big problems are only increased with frequent changes. Professor Gaiger had hardly got into his stride (if we may so express it) when he was taken away to Liverpool; Mr. Pool had just began to show his mettle, to become known to the stock-breeding community, and to set on foot enterprises that promised useful results, when he too is taken away. Who may succeed Mr. Pool is not yet known, and indeed we are not sure that his resignation is up to this date formally in the hands of the directors of the A.D.R.A., but the fact of the impending change is public property, and it may as well be subject of comment. Mr. Pool has given evidence of skill in organising research work. This is no doubt the reason why he has been selected as head of what we have called the Clearing House. But it is greatly to be desired that such prospects may be put before his successor as will ensure something like a permanency."

ARMY VETERINARY SERVICE.

LONDON GAZETTE—WAR OFFICE—REGULAR ARMY.

August 16th.—Maj. F. J. Andrews is restd. to the estabt. (July 16th).

August 20th.—Maj. H. Allen, O.B.E., on completion of 28 years' serv. is placed on ret. pay (Aug. 21st).

The follg. Lts. to be Capts. (May 4th):—J. F. L. Taylor, F. W. Goodall, J. S. Kingston and remains secd., P. C. W. Creagh, A. P. MacDonald and remains secd.

August 22nd.—Col. W. S. Anthony, C.M.G., late R.A.V.C. is placed on the h.p. list under Art. 486, Royal Warrant for Pay and Promotion, 1926 (August 24th).

The follg. Lt.-Col. to be Col.:—H. S. Mosley, D.S.O., R.A.V.C. (Aug. 24th), with Army seniority as Col., June 3rd, 1923, and relinquishes the appt. of Comdt., R.A.V. Sch. and Sch. of Farriery (such seniority not to count for pay and allces. or ret. pay).

Maj. and Bt. Lt.-Col. H. E. Gibbs, D.S.O., to be Lt.-Col. (August 24th); Maj. and Bt. Lt.-Col. E. P. Argyle, D.S.O., to be Comdt., R.A.V. Sch. and Sch. of Farriery (August 24th).

REGULAR ARMY RESERVE OF OFFICERS.

August 20th.—Maj. F. A. S. Moore, having attained the age limit of liability to recall, ceases to belong to the Res. of Off. (June 7th).

TERRITORIAL ARMY RESERVE OF OFFICERS.

August 16th,—Lt. J. Heard, from Active List, to be Lt. (August 17th).

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents

Air-borne Organisms.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—There is a great deal more work to be done in this direction, and the results given by Mr. A. R. Dillon Weston in the *Farmer and Stockbreeder* and other journals yield certain data which, although very incomplete, may help to account for many of the scattered outbreaks of certain diseases. Spore and bacteria plates have been exposed, both in America and at Cambridge, at various altitudes during flights made by aeroplanes and it was found in America that spores and pollen grains were relatively abundant up to 11,000 feet, but the spores only at 16,000. Spores caught at 10,530 feet were viable. In England dishes exposed at 9,000 and 10,000 feet, on being examined, contained no spores, only bacterial colonies, and no fungi developed, owing probably to the bacteria being lighter and consequently ascending higher. The nearer the earth the larger the number of spores and bacteria; at 1,000 feet, 35 fungi growth and 62 bacterial colonies. Cloud and rain, I am informed, probably bring to earth some of the various spores and bacteria. Perhaps the Army Veterinary Department authorities, or the Medical, could get the Air Force to expose plates or tubes at various altitudes to determine which animal and human disease-causing bacteria are to be found at various altitudes.

Yours faithfully, T. F. PRIME.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the North Wales Division, N.V.M.A., from Mr. H. V. Hughes, Hon. Secretary. Royal (Dick) Veterinary College, Edinburgh, Calendar, 1929-30.

Communications from Mr. F. B. Greer (Bradford) and Lt.-Col. T. D. Young (London).